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* * *

Received October 6, 1906

Benjamin Cox. Jr

Benjamin Cox. Jr

A SYNOPSIS

OF THE

Principles of Combination,

AS INVESTIGATED IN THE PRECEDING PAGES,

ARRANGED IN A TABULAR FORM

SO AS TO AFFORD THE STUDENT AN EASY

REFERENCE TO THE

KEY LETTERS.

PHARMACOLOGIA;

COMPREHENDING

The Art of Prescribing

UPON

FIXED AND SCIENTIFIC PRINCIPLES;

TOGETHER WITH THE

HISTORY OF MEDICINAL SUBSTANCES.

BY J. A. PARIS, M.D. F.R.S. F.L.S.

FELLOW OF THE ROYAL COLLEGE OF PHYSICIANS OF LONDON; HONORARY
MEMBER OF THE BOARD OF AGRICULTURE; FELLOW OF THE PHI-
LOSOPHICAL SOCIETY OF CAMBRIDGE; AND OF THE ROYAL
MEDICAL SOCIETY OF EDINBURGH; AND LATE
SENIOR PHYSICIAN TO THE WEST-
MINSTER HOSPITAL, &c.

> Quis Pharmacopœo dabit leges, ignarus ipse agendorum?—Vix profecto dici potest, quantum hæc ignorantia rei medicæ inferat detrimentum.
>
> GAUB: METHOD: CONCINN: FORMUL.

Second American, from the Fifth London Edition, enlarged.

WITH ADDITIONS AND ILLUSTRATIONS OF THE MATERIA MEDICA
OF THE UNITED STATES,

BY ANSEL W. IVES, M.D.

FELLOW OF THE COLLEGE OF PHYSICIANS AND SURGEONS OF THE
UNIVERSITY OF THE STATE OF NEW-YORK, &c.

IN TWO VOLUMES.—VOL. II.

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Southern District of New-York, ss.

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"Pharmacologia; comprehending the Art of Prescribing upon fixed and scientific Principles; together with the History of Medicinal Substances. By J. A. Paris, M.D. F.R.S. F.L.S. Fellow of the Royal College of Physicians of London; Honorary Member of the Board of Agriculture; Fellow of the Philosophical Society of Cambridge; and of the Royal Medical Society of Edinburgh; and late Senior Physician to the Westminster Hospital, &c.

Quis Pharmacopœo dabit leges, ignarus ipse agendorum?—Vix profecto dici potest, quantum hæc ignorantia rei medicæ inferat detrimentum.—*Gaub: Method: Concinn: Formul.*

Second American, from the fifth London Edition, enlarged. With Additions and Illustrations of the Materia Medica of the United States. By Ansel W. Ives M.D. Fellow of the College of Physicians and Surgeons of the University of the State of New-York, &c."

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JAMES DILL,
Clerk of the Southern District of New-York.

PHARMACOLOGIA.

VOLUME THE SECOND.

COMPREHENDING

THE MEDICINAL HISTORY AND CHEMICAL HABITUDES

OF THE

DIFFERENT ARTICLES THAT CONSTITUTE THE

MATERIA MEDICA.

> "*Omnium Simplicium Pharmacorum vires nosse oportet eum qui aliquot compositum est facturus.*"
> ÆTIUS.

PHARMACOLOGIA.

ABIETIS* RESINA. L.E.D. (Pinus Abies, *Resina concreta.*) *Resin of the Spruce Fir.*

Olim, *Thus.—Frankincense.*†

Qualities. *Form*, tears or small brittle masses: *Odour*, very fragrant when burning. It has all the chemical properties of a *Resin*, and is used only for external purposes: see *Pix Arida*. Officinal Preparations. *Empl: Aromatic:* D. *Empl: Galban: comp:* L. *Empl: Opii.* L. *Empl: Thuris.* D.

ABSINTHIUM. (Artemisia Absinthium) *Common Wormwood.*

Qualities. *Odour*, strong and peculiar. *Taste*, intensely bitter, slightly pungent, and very unpleasant, as its name‡ implies. Chemical Composition. Extractive, a small portion of resin, and a green essential oil; in the first of which its bitterness resides, in the last, a narcotic principle; hence the watery extract is not possessed of the nauseous flavour of the plant, but retains its bitterness almost entire; the narcotic principle is therefore dissipated by decoction, but its tonic and anthelmintic properties are not impaired by that process,

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* Abies ab abeo, quod in cœlum longe abeat.

† Dr. Maton, in his appendix to Mr. Lambert's work on the genus *Pinus*, observes that the *Thus* of the ancients, (λίβανος) does not appear to have been the product of any species of Pinus, although we are informed by Dioscorides (Lib. 1. c. 7.) that Pine resin was often substituted for it. He describes, moreover, a method of distinguishing between the two kinds; "*Resin of the Pine*," says he, "*when thrown into the fire dissipates itself in smoke, whereas Frankincense burns with a brisk flame, and with an odour that serves to detect the imposition.*" "Some authors, adds Dr. Maton, have considered the genuine λίβανος (*Thus*) to have been obtained from the *Juniperus Lycia*, and to constitute the *Olibanum* of our shops, but I cannot find any passage in the ancient authors sufficiently precise to corroborate this conjecture." *Op: citat:*

‡ From *α not*, and Ψινθος pleasure.

Med. Uses. The whole plant is powerfully antiseptic; and its bitterness renders it stomachic. Infused in ale it forms the beverage known by the name of *Purl*. Its powers as a vermifuge has bestowed upon it the name of *Wormwood*. Dose, ℈j, ℈ij; and of the infusion, (made in the proportion of ℥j of the plant to oj of water,) f℥i—f℥iss. Incompatible Substances. Precipitates are produced in the decoction or infusion by *Sulphate of Iron*, *Superacetate of Lead*, and some other metallic salts. *Tartarized Antimony* is not in the least affected by it. Off: Prep: *Extract: Absinth:* D.

ACACIÆ GUMMI. L. (Acacia vera.) Mimosa Nilotica. E.D. *Gum Arabic.*

Qualities. It is dry, semi-transparent, brittle, and insipid; by exposure to the air it undergoes no other change than loss of colour. *Sp: Grav:* 1.515. Solubility. It is soluble in water in every proportion, forming a viscid solution, (*mucilage*.) One part dissolved in six of water affords a fluid of the consistence of syrup, and in two parts, a medium well calculated for the union of dry powders. Gum is also soluble in pure alkalies and lime water, as well as in vegetable acids, especially vinegar, with which it forms a mucilage that may be used as a cement, like the watery solution, and with the additional advantage of not being susceptible of mouldiness.* It is insoluble in alcohol, as well as in æther and oils; for a farther history of its habitudes see *Mucilago Acaciæ*. Med. Uses. It is demulcent and nutritious; although it appears in certain states of the body to pass through the bowels without change. When triturated with gum-resins it assists their mechanical division, as in *Form:* 30. Officinal Preparations. *Mucilago Acaciæ*. L.E.D. *Emulcio Mimosæ Niloticæ*. E. *Emulsio Arabica*. D. *Mist. Corn. ust.* L.D. (⊕) *Mist. Cretæ*. L.D. (⊕) *Mist. Moschi*. L. (⊕) *Confect. Amygdal.* L. (⊕) *Pulv. Cret. co.* L. (⊕) *Pulv. Tragacanth. co.* L. (⊕) *Trochisci Carbonat. Calcis* E. (⊕) *Troch. Glycyrrh. Glab.* E. (⊕) *Troch. Glycyrrh. cum Opio*. E. (⊕) *Troch. Gummos.* E. (⊕) Adulterations. Gum Senegal is not unfrequently substituted for it, but this may be distinguished by its clammy and tenacious nature; whereas genuine *gum arabic* is dry and brittle; the fraud is of no consequence in a medical point of view. It is also occasionally mixed with the gum of plum and cherry-trees; this fraud, however, is to be easily detected, for such gum has peculiar properties by which it may be chemically distinguished; see *Mucilago Tragacanth.*

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* Mouldiness is a peculiar plant, propagated by seeds, infinitely small; *Reaumur* found the interior of an addled egg mouldy, hence the seeds must have passed through the pores of the shell!

ACETICA. L.E.D. *Preparations of Vinegar.*

These preparations consist of vegetable principles dissolved in vinegar. OFFICINAL PREPARATIONS. *Acetum Aromaticum.* E. *Acidum Acetosum camphoratum.* E. Medicated vinegars were formerly much extolled; the first London Dispensatory contained no fewer than ten, at present the number is reduced to two, viz. *Acetum Colchici.* L. *Acetum Scillæ.* L.E.D.

ACETIS HYDRARGYRI. E. Acetas Hydrargyri. D. *Acetate of Mercury.*

QUALITIES. *Form,* small flaky crystals; *Colour,* silvery white; *Taste,* acrid. CHEMICAL COMPOSITION. Acetic Acid, and Oxyd of Mercury. SOLUBILITY. It is soluble in hot, but very sparingly in cold water, and quite insoluble in Alcohol. FORMS OF EXHIBITION. It should be always given in pills,* it is however seldom used. DOSE, gr. j. As an external application, a solution of it, in the proportion of grs. ij. in f℥ij of rose-water, has been commended as a cosmetic.

ACETOSÆ FOLIA. L.E. Rumex Acetosa.

Common Sorrel Leaves.

QUALITIES. *Taste.* grateful, austere, and acidulous. CHEMICAL COMPOSITION. All its qualities depend upon the presence of *Super-oxalate of Potass.* In France the plant is commonly cultivated for the use of the table.

ACETOSELLA. L. Oxalis Acetosella.

Wood Sorrel.

The qualities of this plant, like those of the preceding, depend upon *Super-oxalate of Potass.*

ACETUM (Acidum Aceticum Impurum.) *Vinegar,* L.

Acidum Acetosum, E. Acetum Vini, D.

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* KEYSER'S ANTIVENEREAL PILLS consist of this mercurial salt, triturated with Manna.

Qualities. Too well known to require description.[*] **Chemical Composition.** Acetic acid largely diluted with water, vegetable gluten, mucilage, sugar, extractive matter, and frequently malic and tartaric acids, together with small proportions of sulphate of lime, sulphate of potass, and alcohol. Its composition however varies according to the fermented liquor from which it is obtained:[†] e. g. wine yields a paler, purer, and stronger acid than fermented malt liquors or solutions of sugar, hence the superiority of that prepared in France and Italy. Vinegar is liable to spontaneous decomposition, or to become mouldy, and consequently for the purposes of pharmacy it should be distilled; as however the change depends upon the presence of gluten, it may, if boiled, be kept for a much longer time, and if powdered animal[‡] charcoal be previously added, it will become quite colourless like distilled vinegar, and that without being impaired in strength, whereas it always becomes much weaker by distillation. It is a curious circumstance that this is the only vegetable acid, except the *Prussic*, that rises in distillation, in combination with water.

Adulterations. Sulphuric acid, as it does not produce any turbid appearance in vinegar, is generally the acid selected for sharpening it; but here it is necessary to caution the chemist against inferring its presence from the mere occurrence of a precipitate by an *acetate of barytes*, as stated under *Acetic Acid*, since the sulphate of lime, or the sulphate of potass, so often present in common vinegar, would, as well as free sulphuric acid, produce with this test precipitates insoluble in nitric acid. To avoid therefore this fallacy, let the vinegar be assayed for sulphuric acid in the following manner; saturate a given quantity with chalk, and distilled water, and throw the whole upon a filtre; by these means if any sulphuric acid be present, an insoluble sulphate of lime will be formed, which may be recognised by the usual tests. For the purpose of making the vinegar appear stronger, acrid vegetables, as *grains of Paradise*, *berries of Spurge Flax*, *Capsicum*, *Pellitory of Spain*, &c. are sometimes infused in it, but by tasting it with attention, the pungency of such substances may be easily detected. For the other adulterations, see *Acidum Aceticum.*

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[*] Vinegar quenches the thirst, and is particularly refreshing after much bodily exertion. It was this property that invigorated the soldiers of Hannibal in their progress over the Alps; it is absurd to imagine that Livy meant to assert that the rocks were *dissolved* by Vinegar: the expression is only metaphorical. See *Sodæ Murias.*

[†] The varieties of vinegar known in commerce, are three, viz. Wine Vinegar, Malt Vinegar, and Sugar Vinegar; to which may be added that from wood, and which is described under the title of Acidum Aceticum, *e ligno paratum.*

[‡] I apprehend that the superior power of animal charcoal, over that of vegetable origin, in removing colouring matter, depends upon the peculiar texture of the former.

The purest vinegar which I have ever examined is that manufactured from malt, by Mr. Mackintosh of Glasgow. In the former Editions of this work it was stated, that a Vinegar had of late years appeared in the market produced from the distillation of wood, (*Pyroligneous Acid.*) This article has now come into very general use; and the manufacturers have a length succeeded in divesting it of that empyreumatic flavour which had so long rendered it objectionable. See *Acidum Aceticum, e Ligno paratum.*

ACETUM COLCHICI. L. *Vinegar of Meadow Saffron.*

Vinegar appears to be a solvent of the acrid and medicinal principle which resides in the bulb of this plant. Dose f℥ss to f℥ij. in any bland fluid. See *Colchici Radix.*

ACETUM SCILLÆ. L.E.D. *Vinegar of Squill.*

This preparation is an acetic solution of the acrid matter of the squill, upon which its medicinal efficacy depends.* Dose f℥ss to f℥ij. in cinnamon or mint water. See *Scillæ Radix.* Form. 107, 114. This preparation, as well as the *Oxymel,* deposites when long kept, a precipitate consisting of *citrate of lime* and *tannin,* but its medicinal efficacy is not on that account impaired.

ACIDUM ACETICUM. L. (*Ex Aceto.*) **Acidum Acestosum Distillatum. E. Acetum Distillatum. D.**
Acetic Acid.

Qualities. *Odour,* fainter and less agreeable than common vinegar (*Acetum:*) *Taste,* less acid; *Colour,* none. Specific Gravity, varies from 1·006 to 1·0005. Chemical Composition. Acetic acid more largely diluted than that in vinegar, with very minute portions of uncombined mucilage and extractive. Solvent Powers. It is capable of dissolving all those vegetable principles which are soluble in water, and in some cases, as in *Squill, Colchicum,* and in several *Aromatics* and *Narcotics,* its acid appears to extend its solvent powers: at the same time it often modifies or diminishes the medicinal virtues of the substances, as for instance those of *Narcotics;* this circumstance considerably limits its pharmaceutical application;

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[*] This is a very ancient preparation, thus Ausonius,
"*Scillato* decies si cor purgeris *aceto*
Anticipitesque tuum Samii Lucomonis acumen."

when, however, it is employed, a portion of spirit should be always added, in order to counteract the spontaneous decomposition to which it is liable, and the acetic compound should be preserved in stopped bottles. Acetic acid does not dissolve true resins, but it has some action on gum resins. **Med. Uses.** It is refrigerant, and may be advantageously administered in hemorrhage; especially in cases where the super-acetate of lead has been given, since the solubility of this latter substance is increased by it. See *Form.* 57; externally, it may be a convenient adjunct to lotions containing lead. See *Form.* 147. In consequence of its chemical action upon osseous matter, it has been much employed at the Gloucester Infirmary to hasten exfoliation of carious bone. Dr. Powell states (*Translation of the Pharmacop: of London*, 1815,) that one fluid ounce ought to dissolve at least thirteen grains of *white marble*; or, which is equivalent to it, 39·67 grains of crystallized *Sub-carbonate of Soda*: acid of this strength corresponds very nearly with six degrees of the Revenue Acetometer, the proportions being as follow, 100 grains of Pharmacopœia strength will saturate 8,68 grains of crystallized *Sub-carbonate of Soda*; 100 grains of acid of 6° of the Acetometer will saturate 8,70 grains of that salt. **Adulterations.** *Sulphuric Acid* may be detected by a precipitate being produced on the addition of acetate of barytes: this test however will not answer for its detection in common vinegar, for the reason stated under that article. See *Acetum.* The presence of *Nitric Acid* may be discovered by saturating the suspected sample with pure potass, evaporating to dryness, and then treating the product with a highly concentrated alcohol, the acetate of potass will be thus dissolved, but as it exerts no action on the *Nitrate* it will be found in the residuum, and may be recognised by its deflagration, when thrown upon burning charcoal. *Copper* may be detected by the acid assuming a blue colour, when supersaturated with ammonia; and *Lead*, by a solution of sulphuretted hydrogen, producing a dark-coloured precipitate. *Tin* however is the metal with which distilled vinegar is more usually contaminated, for no vegetable acid will act upon lead while any tin is present in the mixture, since the latter being more oxidable than the former, is exclusively dissolved.

ACIDUM ACETICUM, *e Ligno Stillatum.*

Pyro-Ligneous Acid. The acetic acid from wood has lately been very generally introduced to supersede the use of distilled vinegar for the purposes of Medicine and the Arts.* It is at length found to be capable of such complete separation from all foreign matter as to afford a perfectly pure acetic acid, invariable in its acidifying power, and immutable in its chemical properties. In justice to the skill and industry of Messrs. Beaufoy and Co. of South Lambeth, I beg to state that I have examined various specimens of this acid from their manufactory, and that I find it free from those impurities which have hitherto constituted an insuperable objection to its introduction into the Materia Medica. The purified *Pyro-ligneous* acid, manufactured by this company, and sold under the name of "*Improved Distilled Vinegar,*" is perfectly free from any unpleasant taste, as well as colour and sediment; and it forms a limpid and colourless solution with ammonia. The common distilled vinegar of the shops varies essentially in strength as well as purity, differing in acidifying power from 30 to 40 per cent. in value: it is sometimes 7 degrees, and at others less than 5, by the Revenue Acetometer;† and hence has arisen the difficulty of procuring a uniform article for medical application, a difficulty which the introduction of the *pyro-ligneous* acid seems calculated to overcome, as it may be procured from the manufacturers of any degree of concentration, from 6 degrees of the Acetometer, or 2·898 per cent. of real acetic acid, to 130 degrees, or 63·09 per cent. of acid; and even of still higher strength, if required; their common, or *Proof* acid, is about equivalent in strength to that of the best Malt Vinegar, of which 100 parts will saturate 14½ parts of crystallized *Sub-carbonate of Soda*, and consequently contains somewhat less than 5 per cent. of real acid, and will require at least one half part of water to reduce it to the strength of the best common distilled vinegar. It is found that acetic acid of 45 per cent. real acid, dissolves Camphor and the Essential Oils very readily.

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* It had been long known that in the destructive distillation of any kind of wood, an acid is obtained, which was formerly considered of a distinct and peculiar nature, and termed *Acid Spirit of Wood*, and afterward *Pyroligneous Acid*. Glauber appears to have been the first chemist who was aware of its true nature, for he speaks of it as the "*Vinegar of Wood.*" It was however reserved for Fourcroy and Vauquelin to demonstrate its composition by experiment, and they have accordingly proved beyond doubt that it is merely the Acetic acid, contaminated with Empyreumatic oil and Bitumen. The address of modern chemists has at length enabled them to get rid of every trace of these latter ingredients, and to furnish an acid perfectly devoid of any foreign flavour. The crude pyroligneous acid, as it is first received, is rectified by a second distillation in a copper still, in the body of which about 20 gallons of viscid tarry matter are left from every 100. It has now become a transparent brown vinegar, having a considerable empyreuma; it is then redistilled and saturated with quick-lime, and the liquid acetate is evaporated to dryness and submitted to gentle torrefaction, in order to dissipate the empyreumatic matter, and lastly the calcareous salt is decomposed by sulphuric acid, when a pure, perfectly colourless, and grateful vinegar rises in distillation.

† This instrument was invented by Messrs. Taylors for this particular purpose; the principle consists in first forming a neutral salt with dry hydrate of lime and the acid to be examined, and then taking the specific gravity of the solution. Act. 58. G. III. c. 65, § 8.

The Impure Pyroligneous acid, as it first comes over, contaminated with Tar, has, it is said, been very successfully employed as a lotion in Lepra, scrofulous ulcerations, chronic inflammation of the eyes, and edges of the eyelids, and for promoting digestion of irritative ulcers, or those connected with carious bone. It has also been injected into sinuses to produce healthy discharge and adhesive inflammation. M. Monge discovered that this acid has the property of preventing the decomposition of animal substances; it is sufficient to plunge meat for a few moments in this acid, even slightly empyreumatic, to preserve it as long as you please, "Putrefaction," it is said, "not only stops, but retrogrades." To the empyreumatic oil a part of this effect has been ascribed, and hence has been accounted for the agency of smoke in the preservation of hams, tongues, herrings, &c.

CONCENTRATED ACETIC ACID. Acidum Acetosum Forte. E. Acidum Aceticum. D.

Radical Vinegar, has not retained its place in the London Pharmacopœia, as distilled vinegar, from which it differs only in the degree of concentration and purity, is deemed sufficiently strong for all the purposes of medicine. Since, however, it possesses peculiar chemical habitudes, it claims some notice in this work. The concentrated acid may be obtained from the decomposition of acetic salts, by the action of sulphuric acid. It is pungent, acrid, and volatile, and when heated with free access of air, it takes fire very readily. Its solvent powers are much greater than those of distilled vinegar; it is capable of dissolving camphor, resins, and essential oils* copiously, but they are precipitated by dilution; it combines with alcohol, and forms a species of ether; with water, it unites in any

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* HENRY'S AROMATIC VINEGAR is merely an acetic solution of camphor, oil of cloves, of lavender, and of rosemary. A preparation of this kind may be extemporaneously made by putting ʒj of *Acetate of Potass* into a phial with a few drops of some fragant oil, and *m* xx of Sulphuric Acid.

THIEVES VINEGAR, or MARSEILLES VINEGAR, is a pleasant solution of essential oils and camphor, in vinegar; the Edinburgh Pharmacopœia has given a formula for its preparation under the title of "*Acetum Aromaticum.*" The repute of this preparation as a prophylactic in contagious fevers is said to have arisen from the confession of four thieves, who, during the plague of Marseilles, plundered the dead bodies with perfect security, and who upon being arrested stated, on condition of their being spared, that the use of *Aromatic Vinegar* had preserved them from the influence of contagion. It is on proportion, heat being evolved by the mixture. Gold, platina, glass, and earthenware, can alone retain this acid without being corroded.

ACIDUM BENZOICUM. L.E.D. *Benzoic Acid.*

Qualities. *See Powell's Translation of the Pharmacopœia.* **Officinal Preparations.** *Tinctura Camphoræ composita.* L.D. *Tinct: Opii Ammoniat:* E. **Impurities.** The crystals ought to possess a brilliant white colour; they should be entirely soluble in alcohol, and when subjected to heat they should be volatilized without leaving any residuum.

Benzoic acid exists in several vegetables; in the Tonca bean, (*Dipterix Odorata,*) it is frequently to be seen beautifully crystallized on its surface. **Med. Uses.** It is supposed to be stimulant and expectorant; but it is rarely used.

ACIDUM CITRICUM. L. *Citric Acid.*
Concrete Acid of Lemons.

Qualities. *Form,* crystals which are rhomboidal prisms, white, semi-transparent, and persistent. *Taste,* extremely acid, almost caustic. **Solubility.** f℥j of cold water dissolves ʒx, but if boiling, ℥ij. ℥j of the crystals dissolved in a pint of water, is about equivalent to one pint of lemon juice, the solution, however, if kept, is liable to spontaneous decomposition. The following table of equivalents may be found of practical use; the author is aware that they do not exactly agree with the proportions of Dr. Haygarth, but they are the results of careful and repeated experiments, and as such they are submitted with confidence.

EQUIVALENT PROPORTIONS OF CONCRETE CITRIC ACID AND LEMON JUICE, NECESSARY FOR THE NEUTRALIZATION OF ALKALINE SALTS.

Citric Acid.	Lemon Juice.	A Scruple of Alkalies.
grs. x.	f ʒ iij.	Carbonate of Potass.
grs. xv.	f ʒ iiij.	Sub-Carbonate of Potass.
grs. xxv.	f ʒ vij.	Sub-Carbonate of Ammonia.

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this account sometimes called "*Le Vinaigre de quatre voleurs.*" The French Codex has a preparation of this kind, consisting of an acetic infusion of various aromatic herbs and camphor, which is termed "*Acetum Aromaticum Alliatum,*" seu "*Antisepticum,*" vulgo "*des Quartre Voleurs.*" p. 108.

These alkaline citrates are decomposed by the *oxalic*, *tartaric*, and the stronger *mineral acids*, and by the solutions of *lime* and *barytes*. FORMULÆ 107, 137, 123, 168.

Citric acid decomposes the following salts, *viz*. *The Alkaline and Earthy Carbonates; the Alkaline and Metallic Acetates; the Sulphurets of Earths and Alkalies, and Alkaline Soaps*. It curdles the milk of most animals, but it does not produce that effect on human milk, whether applied hot or cold. ADULTERATIONS. *Tartaric Acid*, with which it is sometimes mixed, may be detected by adding to the solution an excess *of Potass*, which will instantly form with it an insoluble super-tartrate, and precipitate in granular crystals. If we add the tartrate of potass for this purpose, we may be deceived, for the citric acid, by neutralizing a portion of its base, will convert the remainder into super-tartrate. See *Potassæ Tartras*. *Sulphuric Acid* is known by the super-acetate of lead producing a precipitate, insoluble in nitric acid. *Muriatic Acid* may be discovered in the same manner, substituting only an acidulous solution of nitrate of silver for the super-acetate of lead. The presence of *Oxalic Acid* may be inferred, if the solution, when added to that of sulphate of lime, produce a precipitate. Malic acid has the power of precipitating silver, mercury, and lead, from their solutions in nitric acid, but no doubt or difficulty can arise from this circumstance, for the fact of its forming a soluble salt with lime will prevent every chance of accidental intrusion, and its price at once secures us against its fraudulent introduction; it might moreover be easily detected by throwing the suspected precipitate upon burning coals, when it would be decomposed. The juices of many other fruits besides the lemon and lime, will furnish the citric acid in abundance, and may be obtained from them by a similar process; e. g. VACCINIUM OXYCOCUS, the *Cranberry*; PRUNUS PADUS, the *Bird's Cherry*; DULCAMARA SOLANUM, the berry of the *Nightshade*; CYNOSBATUS, vel ROSA CANINA, the hep or fruit of the *Wild Brier*. There are many plants whose juices contain combinations of the CITRIC and MALIC acids in considerable abundance, such as FRAGARIA VESCA, the *Wood Strawberry*, and the common *Raspberry*; RIBES RUBRUM, the *Red Gooseberry*; VACCINIUM MYRTILLUS, the *Bilberry*; CRATÆGUS ARIA, the *Hawthorn*; PRUNUS CERASUS, the *Black Cherry*, &c. This fact is interesting, since the juices of such fruits have been long known to possess the property of dissolving the *tartareous* incrustations on the teeth.

ACIDUM HYDRO-CYANICUM.

Hydro-cyanic Acid. Prussic Acid.

This peculiar acid exists in a great variety of native combinations in the vegetable kingdom,* and imparts to them certain properties which have been long known, and esteemed in medicine. It is, however, only lately, that it has been administered in its simple but diluted form. As few practitioners will choose to prepare the acid, it seems unneccessary in the present work to dwell upon the merits of the different processes which have been proposed for its preparation; for a full account of them, as well as for other details of importance, the practitioner is advised to consult a work by Dr. Granville, entitled "*An Historical and Practical Treatise on the use of Prussic Acid. Second Edition. London*, 1820.

Qualities. A colourless transparent liquid, although it occasionally exhibits a yellow tinge; *Odour* like that of bitter almonds; *Taste* bitterish and peculiar; these properties however are soon lost by exposure to air and light, and the acid undergoes spontaneous decomposition. Chem. Composition. The true nature of *Prussic* acid was not ascertained until 1815, when Gay Lussac presented to the Royal Institute of France, a memoir which at once developed its real chemical constitution; and it is now admitted to consist of a peculiar gaseous and highly inflammable compound of carbon and nitrogen, to which the name *Cyanogene*, has been assigned, and hydrogen; the latter body acting as the acidifying principle, whence the term *Hydro-cyanic* acid is well contrived to express its composition. The medicinal acid, however, contains but a small proportion of this concentrated compound; according to M. Majendie, one part of the acid of Gay Lussac and eight parts and a half of water, by weight, constitute the preparation which should be used in medicine. Dr. Ure, who has lately taken considerable pains upon this subject, has constructed a table exhibiting the relations between the specific gravities, and quantities of real acid, in preparations of different strength; from these experiments it would appear that an acid of specific gravity 0·996 or 0·997 is such as is usually prescribed in medicine.* Med. Uses. In a sufficient dose, hydro-cyanic acid instantly destroys life by extinguishing the nervous energy of the body; but it has at the same time been observed that animals submitted to its action would often continue to breathe for several hours freely, and to circulate their blood, although no trace of sensibility or muscular contractility could be found after its application. This remarkable property of extinguishing the general sensibility, without any ostensible injury to respiration and circulation, naturally led to a belief that the hydro-cyanic acid, or prussic acid, might be advantageously used in cases of excessive sensibility and irritation, particularly

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* The more familiar of these are *Bitter Almonds*, the *Cherry Laurel*, (Lauro Cerasus,) the leaves of the *Peach-tree*, the kernels of fruit, pips of apples, &c. The Prussic acid would appear to be most abundant in the thin pellicle that envelopes the kernel; the fleshy parts of these fruits do not contain it, and even the berries of the *Lauro Cerasus* may be eaten with impunity; and yet the distilled water, and oil of this plant is the most destructive of all narcotic poisons, as was evinced by the murder of Sir Theodosius Boughton, by Laurel Water; and by the untimely fate of Dr. Price of Guildford, in the year 1782, who professing to convert Mercury into Gold, offered to repeat his experiments before an adequate tribunal, but put a period to his existence before the appointed day, by a draught of Laurel Water. Consistent with theory, the watery extract of Laurel is harmless, a fact easily explained, since the narcotic acid is entirely volatilized before the fluid can assume the consistence of an extract. The Laurel Water as a medicinal agent appears to have been long known. Linnæus informs us, that it was frequently used in Holland, in Pulmonary consumption. (*Amœnitat. Academ.* vol. iv. p. 40.) The Bark of the *Prunus Padus*, or Bird Cherry Tree, was ascertained to contain Prussic acid, by Mr. Bergeman, in 1811, and it is certainly a curious fact, as Dr. Granville has observed, that superstitious people should have selected the berries of this shrub to form necklaces, which are hung round the neck of children to prevent fits and allay cough from teething. For farther information upon this subject, the reader may consult "*The Chronological recapitulation respecting the Introduction of the Prussic acid into the Practice of Physic*," in the work above cited by Dr. Granville.

* See *Journal of Science and the Arts, No.* xxv. The following table comprehends their results.

Quantity of liquid Acid.	Specific Gravity.	Real Acid per Ct.
100.0	0.9570	16
66.6	0.9768	10.6
57.0	0.9815	9.1
50.0	0.9840	8.0
44.4	0.9870	7.3
40.0	0.9890	6.4
36.4	0.9900	5.8
33.3	0.9914	5.3
30.8	0.9923	5.0
28.6	0.9930	4.6
25.0	0.9940	4 0
22.2	0.9945	3.6
20.0	0.9952	3 2
18.2	0.9958	3.0
16.6	0.9964	2.7
15.4	0.9967	2.5
14.3	0.9970	2.3
13.3	0.9973	2.1
12.5	0.9974	2.0
11.8	0.9975	1.77
10.5	0.9978	1.68
10.0	0.9979	1.60

when these two morbid states are likely to affect either the respiratory organs or the circulation generally. This kind of analogical reasoning, it is said, induced Professor Brera, ten years ago, to administer it in cases of high pulmonary and other inflammations, in doses of four drops twice a day; when, as we are told, the violence of the disease was quickly subdued. The remedy, however, does not appear to have excited much attention, until after the first essay of Dr. Majendie, who deserves whatever credit may belong to its introduction. Seven years of trial have elapsed, and the general sense of the medical profession with respect to its utility may now be collected. As a palliative in certain spasmodic coughs, there is reason for supposing that it *may sometimes* be useful, but in that species of pulmonary irritation for which it was at first so greatly extolled, I will venture to assert that it is far inferior in efficacy to well-directed doses of *Conium*. But there is another class of diseases in which its exhibition is said to prove useful, in dyspeptic affections attended with heartburn; where it is supposed to be capable of reducing the morbid irritability of the stomach, and thereby of enabling the juices of that organ to be more slowly secreted, and of a more healthy character. Dr. Elliotson has published the result of his treatment of stomach complaints with this medicinal agent, and would appear to appropriate to himself the merit of originating the practice, a claim which Mr. Thomson, in the third edition of his Dispensatory, refuses to concede.* As a local remedy, prussic acid has also received no small share of commendation, and it has been said that it is the only application that can be depended upon for allaying the cutaneous irritation so frequently attendant upon certain impetiginous affections. FORMS OF EXHIBITION. It may be conveniently administered in any liquid vehicle, as distilled water, camphor mixture, or in some vegetable infusion. A question has lately arisen whether the effects of the prussic acid might not be more conveniently ensured by the administration of some vegetable in which it exists as a native ingredient; a company of associated Physicians, Surgeons, and Naturalists at Florence, have accordingly expressed their joint opinion that the essential oil of the *Prunus Lauro Cerasus* is to be preferred in medical practice to all other preparations which contain the hydro-cyanic acid; for, say they, unlike the distilled water of the plant, and pure prussic acid, it contains the same proportion of active matter, and of the same power whether recently prepared or not; whether made in one place or another; or whether it has been exposed or not to air, light, or heat. They are also of opinion that olive oil forms the best vehicle for its exhibition in the proportion of one ounce to twelve drops of the essential oil. Other practitioners again prefer *Laurel Water*, made by distilling two drachms of the fresh leaves chopped, with four ounces of water, recommitting the distilled water twice afterward on the same quantity of fresh leaves, and making ultimately four ounces of the menstruum. Of which from ♏xxx to f℥j every six hours may be given until a sedative effect is produced. See *Oleum Amygdalæ Amaræ*. INCOMPATIBLE SUBSTANCES. Hydro-cyanic acid is decomposed by most of the *oxydes* usually employed in medicine, particularly by those of *Mercury* and *Antimony*. The alkalies do not appear to diminish its efficacy, *Nitrate of Silver*, and the salts of iron occasion precipitates; nor ought the *sulphurets*, the *mineral acids*, or *chlorine* to enter with it into prescriptions. DOSE. Of the medicinal hydro-cyanic acid, ♏ij—viij. There is however considerable difficulty with regard to the strength of the dilute acid employed in medicine, since the density is a criterion of greater nicety than can be conveniently used by the majority of practitioners; in fact, as Dr. Ure has observed, the liquid at 0·996, contains about double the quantity of real acid, which it does at 0·998. Dr. Ure has accordingly proposed another test of the strength of this powerful and dangerous medicine, which is not only easier in use, but more delicate in its indications;* it is as follows. To 100 grains, or any other convenient quantity of the prussic acid, contained in a small phial, add in succession, small quantities of the peroxide of mercury, (the common *red precipitate* of the shops) in fine powder, till it ceases to be dissolved on agitation. The weight of the red precipitate taken up, being divided by four, gives a quotient representing the quantity of real prussic acid present. By weighing out beforehand, on a piece of paper, or a watch glass, forty or fifty grains of the peroxide, the residual weight of it shows at once the quantity expended. The operation may always be completed in five minutes, for the red precipitate dissolves as rapidly in the dilute prussic acid, with the aid of slight agitation, as sugar dissolves in water. ADULTERATIONS. If, says Dr. Ure, the presence of muriatic acid be suspected, then the specific gravity of the liquid compared with the gravity of the peroxide dissolved will show how far the suspicion is well founded; thus if 100 grains of acid, specific gravity 0·996, dissolve more than 12 grains of the red precipitate, we may be sure that the liquid has been contaminated with muriatic acid. *Nitrate of Silver*, in common cases, so valuable a reagent for muriatic acid, is unfortunately of little use here, for it gives with prussic acid a floculent white precipitate, soluble in water of ammonia, and insoluble in nitric acid, which may easily be mistaken by common observers, for the *chloride* of that metal. But the difference in the volatility of prussiate and muriate of ammonia may be had recourse to with advantage; the former exhaling at a very gentle heat, the latter requiring a subliming temperature of about 300° *Fah.* After adding ammonia in slight excess to the prussic acid, if we evaporate to dryness at a heat of 212°, we may infer from the residuary sal ammoniac, the quantity of muriatic acid present.

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* It seems to be a contest for a shadow.

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* The following is the chemical reasoning upon which this process is founded. "The prime equivalent of prussic acid is exactly one-eighth of that of the mercurial peroxide But as the prussiate of mercury consists of two primes of acid to one of base, or is in its dry crystalline state, a *Bycyanide*, we have the relation of one to four in the formation of that salt, when we act on the peroxide with cold prussic acid." Hence is derived the above simple rule of analysis. *Journal of Science and the Arts.*

Antidotes. To counteract the poisonous effect of prussic acid, Orfila recommends, after full vomiting has been excited, the exhibition of three or four spoonsful of oil of turpentine, in the infusion of coffee, at intervals of half an hour. M. Virey conceives that sulphate of iron in solution is the best antidote, he having observed that the salt restored a cow that was nearly killed by the essential oil of bitter almonds. When an overdose has been taken, hot brandy and water, and the ammoniated tincture of iron are recommended by Mr. Thomson; to the former I should rely with much greater confidence than upon the latter antidote, or in other words, it is from vital agents, counteracting its sedative influence, rather than from chemical substances, changing its composition, that we can expect any benefit upon such an occasion.

ACIDUM MURIATICUM. L.E.D.

Muriatic Acid.

Qualities. *Form*, a liquid of the specific gravity 1.16, a fluid-ounce of which weighs about 527 grains, and according to Dr. Powell ought, when diluted, to dissolve 220 grains of limestone. *Odour*, strong and pungent; if exposed to the air it emits white fumes. *Taste*, intensely sour and caustic; it is however the weakest of the three mineral acids; and no remarkable elevation of temperature is produced by dilution. **Chemical Composition.** The liquid acid is a solution of muriatic acid gas in water; when of the sp. gr. 1.16, according to Davy, it contains 32.32 per cent. of the gas, which recent experiments have shown to be a compound of *Chlorine* (*Oxy-muriatic acid*) and hydrogen in equal volumes. It has therefore received a name expressive of its composition, and is called *Hydro-chloric*[*] *acid.* We accordingly find that the former element is disengaged from muriatic acid by adding any substance capable of uniting with its hydrogen. For the purpose of obtaining *Chlorine*, we may take three parts of common salt, one of black oxide of manganese, and rather less than three of strong sulphuric acid.[†] Accounts have been received from Spain, that in the midst of the dreadful contagion which reigned in that country, the inhabitants always escaped in those houses where fumigations of chlorine had been used. Muriatic acid gas has also been strongly recommended for the same purpose; it may be easily evolved by pouring sulphuric acid on common salt. If nitric and muriatic acids be mixed, a mutual decomposition takes place, of which water, chlorine, and nitrous acid are the results; this constitutes "nitro-muriatic acid," the *Aqua regia* of the older chemists. A bath acidulated with an acid of this kind has been recommended by Dr. Scott, as a powerful remedy for diseases of the liver in particular, and as a substitute for mercury in general. On the possible influence of this bath, I would beg to make one observation, that the extensive application of a dilute acid to the surface of the body, is, under certain circumstances, capable of affecting the bowels. I have witnessed such an effect from sponging with vinegar and water. In this way the acidulated bath may occasionally produce benefit, but it is extremely difficult to conceive how it can be indebted for its utility to any other mode of operation. (See *Journal of Science and the Arts*, No. 2.) FORMS OF EXHIBITION. Muriatic acid should be administered in some bland fluid, as barley water, gruel, &c. (*Formula* 145.) I have uniformly exhibited it with success in the most malignant cases of typhus and scarlatina, during several years extensive practise in the Westminster Hospital. *See* Vol. I. *page* 89. We should be careful not to apportion its dose in a leaden or pewter spoon. The antiseptic properties of this acid have been long known; Sir Wm.

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[*] This offers a striking example of the confusion produced by the constant changes in chemical nomenclature; in the former edition of this work, the term *Hydro* was prefixed to *Muriatic Acid*, as an epithet expressive of the presence of *water*, whereas the same word is now used to denote the existence of *Hydrogen* as one of its elements.

[†] Dr Powell directs only *two* parts of acid; but this is evidently too little, for it appears by Dr. Wollaston's scale, that 3 parts of salt require 2 1-2 of oil of vitriol for their decomposition; and in addition to this, the oxide of manganese will require a farther addition to convert it into a sulphate.

Fordyce relates that a "dry-salter" acquired a large fortune from possessing a secret that had enabled him to send out provisions to India in a better state of preservation than any others of the trade; his secret consisted in adding a small quantity of muriatic acid to the contents of each cask. After a copious evacuation of the bowels, it is in my experience the most efficacious remedy for preventing the generation of worms; for which purpose the infusion of quassia, stronger than that of the Pharmacopœia, is the best vehicle. DOSE ♏v—xx, frequently repeated. It may be here observed that where the permanent influence of an acid is required, a mineral one should be always preferred, as such bodies appear to be beyond the control of the digestive process,* and are incapable of being decomposed by it; see *Form.* 158, whereas on the contrary it seems probable that the organs of assimilation have command over those of a vegetable nature, and generally decompose them. Dr. Marcet has very judiciously noticed this fact in his luminous work on the treatment of calculi, and I have ventured to offer some farther observations upon this subject, which may be of practical value, under the consideration of *Lithonthryptics*, vol. I. page 156. ADULTERATIONS. *Sulphuric acid* is detected by diluting the acid with six parts of distilled water, and adding a few drops of the muriate of barytes, which occasions a white precipitate if any be present. *Iron*, by saturatinga diluted portion with pure carbonate of soda, and adding prussiate of potass, which will indicate its presence by a blue precipitate. *Copper*, by the production of a blue colour when supersaturated with ammonia. The yellow tinge of the acid usually met with in commerce, may depend either upon the presence of iron, vegetable extractive, or a small portion of chlorine.

ACIDUM NITRICUM. L.E.D. *Nitric Acid.*
Aqua Fortis.

QUALITIES. A limpid liquid of the sp. gr. 1·500, a fluid ounce of which is equal to about 11 drachms 1 scruple by weight, and ought to decompose of pure limestone an ounce; it emits white fumes of a suffocating odour. *Taste*, extremely acid; it is highly corrosive, and tinges the skin indelibly yellow. CHEMICAL COMPOSITION. When of the sp. gr. 1·500, it contains 74·895 per cent. of dry acid; (whose ultimate elements are one portion of nitrogen, and five of oxygen,) the compliment 25·105 parts is water. It is decomposed with violent action by all combustibles, and when mixed with volatile oils, it causes their inflammation. It boils at 210, and when its specific gravity is below 1·4, it is strengthened, when stronger than 1·45 it is weakened by ebullition. Uses. It is employed only as a pharmaceutical agent. Adulerations. *Sulphuric acid* may be detected by a precipitate being produced on the addition of nitrate of barytes; in the application however of this test, Mr. Hume has shown that unless this as well as the nitric acid be diluted, a precipitate will occur, although sulphuric acid should not be present; a circumstance which depends upon the barytic salt yielding its water of solution to the acid under examination, and becoming insoluble. *Muriatic acid* is discovered by nitrate of silver, affording a precipitate at first white, but becoming coloured by exposure to light; the nitric acid ought to be perfectly colourless, but to preserve it in such a state, it must be closely stopped, and kept in a dark place, or it will soon be converted into the nitrous kind.

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* There is a curious illustration of this fact in the German "*Ephemerides;*" the case of a person is described who hadtaken so much Elixir of Vitriol that his keys were rusted in his pocket, by the transudation of the acid through his skin!

ACIDUM NITRICUM DILUTUM. L.
Acidum Nitrosum Dilutum. E.D.
Dilute Nitric Acid.

It is much to be regretted that the proportion of water directed for the dilution of this acid, varies considerably in the different pharmacopœias; that prepared according to the Edinburgh, Dublin, and former London formulæ, being in strength to that of the present Pharmacopœia of London, as 4 to 1. Dose ♏x to xl. This acid is a very powerful antiphlogistic remedy; it has been much extolled in diseases of the liver, and in syphilis. Mr Pearson, however, observes, that we ought not to rely upon it in any form of lues venerea, although it may be often serviceable in restraining the progress of the disease when an impaired constitution or other circumstances render the exhibition of mercury improper; when sufficiently dilute, it forms an excellent lotion for old indolent ulcers. It proves also expectorant, see *Form.* 139, 140; and it is occasionally used with success for the purpose of counteracting the consecutive effects of opium. See *Form.* 16.

ACIDUM NITROSUM. E.D. *Nitrous Acid.*

QUALITIES. A liquid emitting fumes of a flame red colour, and of a very pungent and remarkable odour. The acid is either blue. green, straw-coloured, clear orange-yellow, or deep orange-yellow, according to the proportion of nitrous acid gas* with which it is charged. CHEMICAL COMPOSITION. This acid is improperly denominated *Nitrous*, for it is nitric acid, holding nitrous acid gas loosely combined; by dilution this last constituent is disengaged, and the acid, after passing through a succession of different colours, becomes pure nitric acid; the application of a gentle heat effects the same changes.

ACIDUM SULPHURICUM. L.E.D.

Sulphuric Acid.

Oil of Vitriol, Vitriolic Acid.

QUALITIES. *Form*, a thick liquid of an oily consistence, sp. gr. 1·85; a fluid ounce weighs a fraction of a grain more than fourteen drachms. *Colour* none, but it acquires a brown tinge from the smallest portion of carbonaceous matter; mere exposure to the air is sufficient for this purpose, in consequence of the acid disorganizing and carbonating the vegetable and animal matter suspended in the atmosphere; it is therefore evident that bottles in which it is preserved ought not to have stoppers of cork, but those of glass. CHEMICAL COMPOSITION. Like the other mineral acids, it has never been obtained in an insulated state without water; according to Davy, the composition of the strongest acid may be thus expressed: sulphur 30, oxygen 45, water 17. It has a very powerful affinity for water, and produces when mixed with it a very considerable heat; exposed to the atmosphere, it imbibes at least seven times its own weight of water, and so rapidly as to double its weight in a month; when of the sp. gr. 1·85, it rises in vapour at about 550°, and distils unaltered, whereas weaker acids, by being boiled lose water, and are brought to that degree of concentration; when diluted with 12 or 13 per cent. of water, an acid results of the sp. gr. 1·780, and in this state of dilution it boils at 435°, and freezes sooner than water; a knowledge of this curious fact suggests to the prudent chemist an important precaution; Mr. Parkes, in his Chemical Essays, vol. ii. relates the occurrence of a terrible accident which happened in consequence of this circumstance not having been attended to.—"Carboy after carboy burst by the expansion of the acid in the act of freezing, and had not the packed carboys that remained been immediately immersed in tepid water, not a single one would have escaped the general wreck."

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* *Nitrous acid gas* is a combination of nitrous gas and oxygen.

ADULTERATIONS. The ordinary acid of the shops contains in general 3 or 4 per cent. of saline matter, which consists of about two-thirds of sulphate of potass, and one-third of sulphate of lead. Dr. Ure observes, that even more is occasionally found in consequence of the employment of nitre to remove the brown colour given to the acid by carbonaceous matter; the amount of adulterations, he observes, may be readily determined by evaporating a definite weight of the acid in a small capsule of platinum; these impurities, however, in a medical point are immaterial, since they are at once separated by dilution, but in a commercial sense, they deserve attention, as their presence considerably increases the specific gravity of the acid. Dr. Ure is of opinion that genuine commercial acid should never exceed 1·8485, and that any density beyond this is the effect of saline contamination. (*Journal of Science and the Arts*, *No.* 7.)

ACIDUM SULPHURICUM DILUTUM. L.E.D.

Dilute Sulphuric Acid.

By the dilution of this acid, two objects are accomplished,—it is purified, and its dose is more easily apportioned; but it is a circumstance of regret that the strength of this preparation should so materially vary in the different Pharmacopœias.

After the acid is diluted, the sediment ought to be carefully removed, and the water employed for the purpose should be distilled, for although it be in its purest natural state, it will nevertheless contain impregnations capable of affecting the acid. USES. In addition to the antiseptic and refrigerant virtues which it possesses in common with the other mineral acids, it has astringent properties that render it a most valuable medicine, especially in weakness and relaxation of the digestive organs, in colliquative sweats, and in internal hæmorrhagy; in Epistaxis and Hemophthysis it was Sydenham's favourite remedy; on the same account, when sufficiently dilute, it has been successfully used as a collyrium in the atonic stages of ophthalmia, and as an injection in protracted gonorrhœa. DOSE ♏x to xl. To prevent it from injuring the enamel of the teeth, it may be sucked through a quill, and the mouth should be carefully washed after each dose. The *Infusum Rosæ* furnishes an elegant vehicle for its administration. See *Form.* 40. OFFICINAL PREPARATIONS. *Acidum Sulphuricum Aromaticum.*[*] E. *Infusum Rosæ.* L.

ACONITI FOLIA. L.E.D. (*Aconitum Napellus.*[†]) *Aconite. Wolfsbane, Monkshood.*

QUALITIES. *Taste,* moderately bitter, and acrid, leaving in the mouth a painful sensation of heat and roughness. *Odour* faint and narcotic; their peculiar properties are considerably deteriorated by drying. CHEMICAL COMPOSITION. M. Brandes has ascertained that the narcotic principle of this plant is a peculiar alkali, to which he has given the name *Aconita.*[‡] SOLUBILITY. Water and alcohol only imperfectly extract their virtues. MED. USES. It is narcotic, and occasions, in over doses, nausea, vomiting, vertigo, hyper-catharsis, cold sweats, convulsions, and death; effects which entirely depend upon its action on the brain. It was first administered in 1702, by Stöerk, of Vienna, in chronic rheumatism, gout, schirrhus, and paralysis; more lately, it has been employed in scrofula, cancer, and intermittents, and it is said with much effect. On account of the variable strength of the leaves, they can hardly be given with safety and effect; the extract, (*which see,*) presents the more eligible form of exhibition. The leaves are, however, sometimes given in the form of powder, generally combined with some mercurial alterative, or with antimonials, camphor, and other diaphoretics. Dose gr. i—x. OFFICINAL PREP: *Extractum Aconiti.* L.E.

ADEPS PRÆPARATA. L. ADEPS SUI SCROFÆ, *vulgo* Axungia Porcina. E. ADEPS SUILLUS PRÆPARATUS. D. *Prepared Hog's Lard. Fat. Áxunge.*[‖]

QUALITIES. *Consistence,* soft or nearly semifluid. *Odour and Taste,* none; at 97° it melts. CHEMICAL COMPOSITION.

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[*] ELIXIR OF VITRIOL. The Preparation sold under this name is the *Acid: Sulph: Aromat: E.* and is imperfectly æthereal in its nature. It is a grateful medicine. A spurious article is often sold for it, which is nothing but the diluted acid, coloured by the addition of a tincture.

I will take this occasion to state, that the term *Elixir* is of Arabian origin, viz. *Elechschir,* or *Elikscir,* i. e. an Essence, or pure mass without any dregs.

[†] The Dublin college, on the authority of Willdenow, admits the A. *Neomontanum,* as the species of Aconite which has always been used in medicine; although the other colleges, in consequence of a botanical error of Stöerck, who introduced it into practice, direct the A. *Napellus.*

[‡] See note under the article opium.

[‖] *Axunge,* from its being used as the grease of wheels, ab *Axe* rotarum quæ unguuntur.

It consists of two distinct bodies which appear to exist together in a state of mechanical mixture, viz. *Stearin* (from στεαρ, tallow) which is white, brittle, and in appearance somewhat resembling wax; and *Elain* (from ελαιον, oil) very similar to vegetable oil in appearance, and is liquid at 59°. According to the experiments of Braconnot, the proportion of *Elain* is to that of *Stearin*, in hog's lard, as 62 : 38. SOLUBILITY. It is insoluble in water, and alcohol; with the alkalies it unites and forms soaps. INCOMPATIBLE SUBSTANCES. *Extracts*, *Spirituous Preparations*, *Tinctures*, and *Infusions*, are incapable of uniting perfectly with lard, without some intermedium; the following substances on the contrary are capable of contracting with it a most intimate union. 1. *All dry powders*, whether of a vegetable or mineral nature. 2. *Fixed and Volatile Oils*. 3. *Balsams*. 4. *Camphor*. 5. *Soaps*. It is principally employed in the formation of ointments, plasters, and liniments.

ÆRUGO. L.D. (Sub-acetas Cupri *Impura*.) SUB-ACETIS CUPRI. E.

Verdigris.

QUALITIES. *Form*, a dry mass composed of minute chrystals, not deliquescent; *Colour*, bluish green. CHEMICAL COMPOSITION. Several constituents enter into its composition, viz. Acetate and sub-acetate of copper, carbonate of copper, and copper partly metallic and partly oxidized; it contains also the stalks of grapes and other extraneous substances. SOLUBILITY. Boiling water dissolves it in part, and produces in it a chemical change, by transforming one portion of the *sub*-acetate into the soluble acetate, and another into an oxyd of copper, which is precipitated; with cold water this substance demeans itself differently, the acetate is dissolved by it, whilst that portion which is in the state of *sub*-salt remains suspended in the form of a fine green powder. Vinegar converts all the *Ærugo* into a soluble acetate, this liquid therefore ought never to be employed for favouring vomiting in cases where an overdose has been swallowed, for the reasons stated in the first volume of this work, p. 167. Sulphuric acid poured on powdered *verdigris* decomposes it with effervescence, and vapours of acetic acid are disengaged. It appears from the experiments and observations of Duval and Orfila, that sugar exercises a chemical action on it, by which its solubility is diminished, and that on this account it acts as a specific against its poisonous effects. Uses. It is so uncertain and violent in its operation that it is rarely employed, except externally,* when it acts as a powerful detergent, and mild escharotic; and in the form of ointment, is a valuable application for many cutaneous affections, especially the aggravated kinds of Tetter. Officinal Preparations. *Ærugo Preparata*, D. *Linimentum Æruginis*. L.D. Adulterations. There is a spurious article sold under the name of *English Verdigris*, which consists of sulphate of copper, triturated with super-acetate of lead; and to make the fraud still more complete, the soft mass is mixed with the stalks of raisins.

ÆTHER SULPHURICUS RECTIFICATUS. L.

Rectified Sulphuric Æther.

Qualities. A colourless liquid of sp: gr: 739. *Odour*, pungent and fragrant; it is highly volatile, and when perfectly free from alcohol it boils at 98°; it is extremely inflammable, a circumstance which should be remembered when it is poured from one vessel to another by candle light. Chemical Composition. When pure it consists of oxygen, hydrogen, and carbon; the rectified æther however still contains some water and alcohol, for Lovitz obtained an æther of 632. Solubility. One part requires for its solution ten of water; with alcohol and ammonia it unites in every proportion. Solvent Powers. It is one of the most powerful solvents known in vegetable chemistry, as it dissolves balsams, resins, gum-resins, wax, camphor, extractive, &c.; it takes up about a twentieth of its weight of sulphur, but it exerts no solvent power upon the fixed alkalies. Forms of Exhibition. In any liquid vehicle, if in decoctions or infusions, they should be previously cooled. *See Formulæ* 20, 22, 23. Medical Uses. It is highly valuable as a diffusible stimulant, narcotic, and antispasmodic. Dose, fʒss to fʒij, which, in order to produce the full effect of the remedy, must be repeated at short intervals. Æther, independent of such virtues, has another valuable property consequent upon its rapid evaporation, that of producing cold and dryness; it is therefore when externally applied and allowed to evaporate, a most powerful refrigerant, and has proved valuable in scalds or burns, in facilitating the reduction of strangulated hernia, and in diminishing excessive circulation in the brain;

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* Dr. Smellome's Ointment for the Eyes. It consists of half a drachm of Verdigris finely powdered and rubbed with oil, and then mixed with an ounce of yellow Basilicon, (*Ceratum Resinæ*, P.L.)

if however it be so confined, that its rapid evaporation is prevented, a very opposite effect is produced, and it proves stimulant, rubefacient, and even vesicatory. With regard to the other property incidental to it, that of producing dryness, I am not aware that it has hitherto been applied to any pharmaceutical purpose; the fact may be satisfactorily shown by a very simple experiment, by rincing a phial with æther, to the interior of which drops of water obstinately adhere, when by exposing it to a current of air, it will be completely dry in a few minutes. It may be noticed in this place that a mixture of sulphuric and muriatic æthers evaporates instantaneously, and produces a degree of cold considerably below 0 of Fahrenheit. ADULTERATIONS and IMPURITIES. Its specific gravity affords the best indication of its purity; *Sulphuric Acid* may be detected by a precipitation on the addition of a solution of barytes, and by its reddening the colour of litmus; *Alcohol*, by its forming with phosphorus a milky instead of a limpid solution. M. Gay Lussac has observed that when kept for a considerable time without disturbance, it undergoes spontaneous decomposition, and that acetic acid, perhaps some alcohol, and a particular oil, are produced from it.

ALCOHOL.* L.D. *Alcohol. Ardent Spirit.*

QUALITIES. A transparent, and colourless liquid of the specific gravity ·815.; it does not become solid by any known diminution of temperature; it boils at 176°. and if water be added, its boiling point is proportionably raised; hence, says Dr. Henry, the temperature at which it boils is not a bad test of its strength; it is combustible, and burns with a blue flame, leaving no residue. CHEMICAL COMPOSITION. Alcohol, in a state of complete purity, consists of carbon, hydrogen, and oxygen, in proportions not hitherto determined with accuracy; this preparation however contains seven per cent. of water; Lovitz and Saussure succeeded in obtaining it at a specific gravity of ·791, which may be considered as nearly pure. Alcohol unites chemically with water; and caloric is evolved during this union; the quantity of alcohol and water in mixtures of different specific gravities, may be learned from Mr. Gilpin's tables, *Philosophical Transactions*, 1794, or *Nicholson's Journal*, *4to. vol.* 1. The Edinburgh Pharmacopœia has no process for the preparation of alcohol, but it most incorrectly assigns the title to that which is the "Rectified Spirit" of the other Colleges. Solvent Powers. Alcohol dissolves soap; vegetable extract; sugar; oxalic, camphoric, tartaric, gallic, and benzoic acids; volatile oils; resins, and balsams. it combines also with sulphur, and the pure fixed alkalies, but not with their carbonates: for its other habitudes and applications, see *Spiritus Rectificatus*.

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* *Alcohol* is a term of Alchemical origin, and signified the pure substance of bodies, separated by sublimation from the impure particles, as *Alcohol Antimonii*, &c.

ALLII RADIX. L.E.D. Allium Savitum.
Garlic.[*]

Qualities. This bulbous root has when recent a fœtid smell, and acrid taste, which are extracted by watery infusion; by decoction they are nearly lost; by expression, the root furnishes almost one-fourth of its weight of a limpid juice, and by distillation, an odorous, acrid, essential oil is procured, in which the existence of sulphur may be detected. Garlic has a considerable analogy to squill and onion, and like them, exerts a diuretic, diaphoretic, expectorant, and stimulant operation; (see vol. I. p. 134,) it is however but rarely used in modern practice, as it possesses no superiority over remedies less nauseous and objectionable; the bruised root, externally applied, is highly stimulant and rubefacient. Officinal Preparation. *Syrupus Allii*. D.[†]

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[*] Garlic, leeks, and onions constitute a tribe of culinary vegetables that has undergone great vicissitudes in reputation: among the Egyptians the onion and leek were esteemed as divinities, thus Juvenal,

> "O sanctas gentes quibus hæc nascuntur in hortis
> Numina!"

while, by the Greeks, garlic was detested, although their husbandmen had been from the most remote antiquity in the habit of eating it, which Æmilius Macer explains by supposing that its strong odour was useful in driving away the venomous serpents and insects by which they were infested.

Horace alludes to this custom in his 3d *Epode*, which he composed in consequence of having been made violently sick by garlic at a supper with Mecænas.

> "Cicutis *Allium* nocentius
> O dura Messorum ilia!"

The most powerful antidotes to the flavour of this tribe of vegetables are the aromatic leaves and seeds of the Umbelliferæ; thus the disagreeable odour of a person's breath after the ingestion of an onion is best counteracted by parsley; and if leek or garlic be mixed with a combination of aromatic ingredients, its virulence will be greatly mitigated and corrected, nor does the fact seem to have escaped the observation of the husbandman in Virgil,

> "*Allia*, Serpyllumque, herbas contundit olentes."
> *Eclog*. 2. *line* 11.

And the fact itself offers an additional illustration of the important principle of combination, discussed in vol. I. p. 180.

[†] Taylor's Remedy for Deafness. Garlic infused in oil of almonds, and coloured by alkanet root.

ALOES EXTRACTUM. *Aloes.*

There are three species met with in the shops, viz.

1. ALÖE SPICATA. L. Socotorina, D. PERFOLIATA. E.	Socotrine Aloes. Cape Aloes.
2. ALÖE VULGARIS. L. Hepatica. E.D.	Common or Barbadoes Aloes.
3. ALÖE CABALINA. Fetid, Cabaline, or Horse Aloes.	Employed only by Farriers.

QUALITIES. The above varieties of aloes differ in their purity, and likewise in their sensible qualities; the *Socotrine* is the purest, it is in small pieces of a reddish brown colour; the *Barbadoes* is in large masses, of a lighter colour, and having an odour much stronger and less pleasant; the *Cabaline* is still more impure, and less powerful. All the kinds are characterized by an intensely bitter taste, which, in the *Socotrine*, is accompanied by an aromatic flavour. CHEMICAL COMPOSITION. In this there appears to be some obscurity; M. Braconnot (*Ann. Chim. tom.* 68.) conceives it to be a substance, *sui generis*, which he terms "*bitter resin*," whilst others regard it as composed of resin, gum, and extractive, the proportions of which are supposed to vary in the different species, but that their peculiar virtues reside in the extractive part. SOLUBILITY. It is to the slowness with which aloes undergoes solution in the *primæ viæ*, that it is indebted for the medicinal properties which distinguish this substance; by boiling water it is dissolved, but on cooling a precipitation ensues, and by long decoction it becomes quite inert; weak acids dissolves it more abundantly than water, but proof spirit is the most perfect solvent: its solubility is increased by the addition of alkaline salts and soaps, but by such a combination aloes undergoes a material change in its medicinal properties; the bitterness is diminished, its purgative effects impaired, and it ceases to operate specifically upon the large intestines, a fact so far valuable, as it enables us in certain cases to obviate its irritating action upon the rectum. MEDICAL USE. Aloes is a bitter stimulating purgative, emptying the large intestines, without making the stools thin; it likewise warms the habit, quickens the circulation, and promotes the uterine and hemorrhoidal fluxes. DOSE, g. v. to xv. No greater effect is produced by a large dose than from one comparatively moderate; its tendency, however, to irritate the rectum renders it, in many cases, an objectionable remedy; and its sympathetic action on the uterus may occasionally produce mischief, in irritable habits, while in other states it may for reasons equally obvious, prove beneficial. FORMS OF EXHIBITION. The form of pill should be preferred on account of its extreme bitterness, as well as being, for the reasons above mentioned, the one most likely to fulfil the intention of its exhibition; for an addition to what has been stated in the first vol. of this work, on the important influence of solubility, it may be here observed that since aloes does not undergo solution in the stomach, it is admirably adapted for the basis of remedies intended to obviate constitutional costiveness, for in our endeavours to supply the deficiencies of nature by the resources of art, we should at least attempt to imitate the modes of her operation; the natural stimulus of the intestines, the bile, is poured into them below the stomach, and whenever it regurgitates into that organ it produces disease; so it happens with our cathartic medicines, and unless we so modify their solubility that their operation cannot commence until after their passage through the stomach, we shall find that we only increase the evil we are endeavouring to obviate, and that in addition to the torpor of the intestinal canal, we shall induce the stomach to participate in the disease, or excite a morbid fretfulness of that organ which will be attended with the most distressing symptoms.*

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* **ANDERSON'S PILLS** consist of the Barbadoes Aloes with a proportion of Jalap, and Oil of Anniseed.

HOOPER'S PILLS.—Pil. Aloes cum Myrrha (*Pil. Rufi*) Sulphate of Iron, and Canella Bark, to which is added a portion of Ivory Black.

DIXON'S ANTIBILIOUS PILLS.—Aloes, Scammony, Rhubarb, and Tartarized Antimony.

SPEEDIMAN'S PILLS.—Aloes, Myrrh, Rhubarb, Extract of Chamomile, and some Essential Oil of Chamomile.

DINNER PILLS.—**LADY WEBSTER'S, or LADY CRESPIGNY'S PILL.**—These popular pills are the "*Pilulæ Stomachicæ*," vulgo, "*Pilulæ ante cibum*" of the Codex Medicamèntarius Parisiensis. Editio Quinta, A.D. 1758. vis. ℞. Aloes optimæ ʒ vj, Mastiches, et Rosarum rubrarum aa ʒ ij, Syrupi de Absinthio q. s. ut fiat massa,—the mass is divided into pills of 3 grains each. The operation of this pill is to produce a copious and bulky evacuation, and in this respect experience has fully established its value. It is difficult to explain the *modus operandi* of the *Mastiche*, unless we suppose that it depends upon its dividing the particles of the Aloes, and thereby modifying its solubility.

FOTHERGILL'S PILLS.—Aloes, Scammony, Colocynth, and Oxide of Antimony.

PETER'S PILLS.—Aloes, Jalap, Scammony, and Gamboge, equal part ʒ ij —Calomel ʒ i.

RADCLIFF'S ELIXIR.—℞. Aloes Socot: ʒ vj, Cort: Cinnamon et Rad: Zedoar aa ʒ ss—Rad: Rhei ʒ i. Coccinel: ʒ ss Syrup: Rhamni f℥ij Spirit: Tenuior: oj—Aquæ Puræ f℥v.

BEAUME DE VIE, see *Decoct: Aloes compositum.*

THE ELIXIR OF LONGEVITY, of *Dr. Jernits* of Sweden. This is an aromatic tincture, with Aloes.

See Formulæ 12, 13, 78, 79, 80, 81. Aloes in combination with assafœtida furnishes an eligible purgative in the dyspepsia of old persons; it is also well calculated to obviate the costiveness so generally produced by Opium, (*Form:* 11, 12, 13.) See also vol. I. p. 196. OFFICINAL PREPARATIONS. *Pulv: Aloes comp:* L. *Pil: Alöes cum Myrrha.* L.E.D. *Pil: Alöes comp. Pil: Alöes cum Assafœtida.* E. *Pil: Alöes cum Colocynthide.* E. *Pil: Cambogiæ comp:* (𝕱. 𝕸.) L. *Pil: Rhei. comp:* (𝕱) E. *Pil. Scammon, cum Aloe.* D. *Decoctum Aloes comp:* L. *Extractum Aloes purificatum.* L.D. *Extractum Colocynthidis comp:* L.D. (𝕱) *Tinct. Alöes.* L.E.D. *Tinct: Alöes comp:* L.E.D. *Tinct: Alöes Ætherea.* E. *Tinct: Benzoin: comp.* (𝕲) L.E.D. *Tinct: Rhei et Aloes.* E. *Vinum Alöes.* L.E.D. ADULTERATIONS. It is frequently adulterated with common resin, but the fraud more generally committed is that of mixing with, or substituting the inferior species for the *Socotrine*, but the *Barbadoes Aloes* may, independent of its want of aromatic flavour, be distinguished from the *Socotrine* by a simple test, for the latter dissolves entirely in boiling water and alcohol, whereas the former, when treated in a similar manner, leaves a considerable residue; sometimes the *Horse Aloes* is made to appear so bright and pure, as not to be easily distinguished by the eye even from the *Socotrine*, but its rank odour, of which no art can divest it, will readily betray the fraud.

ALUMEN. (*Super-sulphas Aluminæ et Potassæ.*) Sulphas Aluminæ. E.

Alumen. D. *Alum.*

QUALITIES. *Form*, octohedral crystals, whose sides are equilateral triangles; they are slightly efflorescent. *Taste*, sweet, rough and acidulous. CHEMICAL COMPOSITION. It is a triple, or sometimes a quadruple salt, with excess of acid, consisting of sulphuric acid and alumina, with potass, or ammonia, or frequently both of them; the nature of the alkali however does not in the least appear to affect the properties of alum, although it produces a crystallographic modification; for where potass is present, the summit of the crystal will exhibit a truncation. Dr. Ure has lately produced alum with soda, and the combination differs from common alum only in its greater degree of solubility, a property which at once recommends it to the attention of the pharmaceutist and physician. SOLUBILITY. A fluid ounce of cold water dissolves 30 grains, but if boiling four drachms; it is insoluble in alcohol. Incompatible Substances. *Alkalies* and *alkaline salts*, after neutralizing the excess of acid, precipitate the alumine. It is also decomposed by *carbonate* and *muriate of ammonia*, *carbonate of magnesia*, and *tartrate of potass*, *by lime-water*, *superacetate of lead*, and *the salts of mercury*, as well as by many vegetable and animal substances, especially *galls* and *kino*. It is on this account very injudicious to combine alum with any vegetable astringent with a view to increase its virtues; thus the "*Pulvis Sulphatis Aluminæ compositus*" of the Edinburgh college, is less powerful than any of the ingredients of which it is composed; and the addition of alum to the decoction of bark, undoubtedly diminishes its efficacy as an astringent injection. Medical Uses. Alum is internally a powerful astringent, in hæmorrhages and inordinate fluxes, and is externally useful for repellent and astringent lotions and collyria. Van-Helmont was the first person who employed alum in uterine hemorrhage, and the success of the practice very considerably enhanced his reputation. *Boerhaave's* astringent powder for the ague consisted of *Alum* and *Nutmeg* with the addition of *Armenian bole*. Dose, gr. x. In large doses it is liable to excite nausea, and to act upon the bowels. Nutmeg or some aromatic should therefore be joined with it. Forms of Exhibition. In solution, or in substance made into pills with extract; (*Form*: 53, 56,) it is sometimes given with advantage in the form of whey (*Alum-whey—Scrum Aluminosum*) made by boiling ʒij with a pint of milk, and then straining, the dose of which is a wine glass full; (*Form*: 54.) By briskly agitating a drachm of alum with the white of an egg, a coagulum is formed (*Alum curd*, *Albumen Aluminosum*) which is serviceable in some species of ophthalmia, when applied between two pieces of thin linen rag. As alum is not decomposed by sulphate of lime, hard water may be safely used for its solution. Alum has the effect of retarding, and in some instances of preventing, the acetous fermentation in vegetables; thus when added to common *paste* it prevents its becoming sour; animal substances, as *glue*, are preserved by it in a similar manner. It has also the property of clearing turbid water, wine, and spirituous liquors, for which purpose it is extensively employed. Officinal Preparations. *Liquor Alum*: *co.* L. *Pulv*: *Alum*: *co.* E.

Alumen Exsiccatum, L. Ustum. D. *Dried Alum*. By the action of heat alum undergoes watery fusion, yields its water of crystallization, and loses more than one-third of its weight; if the heat be too intense, or long contnued, it is deprived of a great part of its acid. It has been recommended in doses of a scruple, in cholic, when it has been said to operate gently upon the bowels, and to relieve the pain: I have myself experienced this good effect when the cholic has been produced by the action of lead: Dr. Grashuis, a Dutch Physician, first recommended its use in Cholica Pictonum. The preparation, however, is principally used as an external application, having a degree of escharotic power, but it should be remembered that as it owes such power to an excess of acid, unless it be carefully prepared, it must be inefficient. It ought to redden syrup of violets.

Alumen Rupeum. *Roche* or *Rock Alum*. This variety was originally brought from Roccha, formerly called Edessa, in Syria, in fragments about the size of an almond, covered with an efflorescence of a pale rose colour; that however which is now sold under this name is common English alum, artificially coloured. It is unimportant.

Alumen Romanum. *Roman Alum* is in irregular octohedral masses, powdery on the surface; it is the purest kind, and contains no ammonia in its composition.

AMMONIACUM. L.E.D. *Heracleum Gummiferum*.
Ammoniac.

Qualities. *Form*, Masses composed of fragments or tears, yellow on the surface, and white within; *Taste*, a nauseous sweet, followed by a bitter flavour; *Odour*, faint, but not unpleasant. Chemical Composition. Gum resin, gluten, and some volatile matter. Solubility. It is partly soluble in water, vinegar, alcohol, æther, and the solutions of the alkalies; when triturated with water a milky liquor is formed, which is a solution of gum holding the resin in suspension. and if the yolk of an egg be employed, the mixture is more permanent; water appears to be its proper solvent. Uses. Stimulant, antispasmodic, and expectorant: in large doses gently purgative and sometimes diuretic; after the exhibition of smart purgatives in combination with rhubarb, it proves valuable in mesenteric affections by correcting the viscid secretion of the intestines; dissolved in nitric acid, it is said to prove an excellent expectorant in cases where large accumulations of purulent or viscid matter exist with feeble and difficult expectoration. See *Form*. 140. Forms of Exhibition. In solution, see *Mist: Ammoniac*. and in pills with bitter extracts, myrrh, and other gum-resins; if rubbed with camphor, a mass is at once produced very suitable for pills; vinegar renders it soft, and adapts it for plasters. Dose, grs. x to xxx. Officinal Preparations. *Mist. Ammoniac.* L.D. *Pil, Scillæ co:* L.E. ([illegible]) *Emplast: Ammoniac:* L. *Emplast: Gummos:* E. *Emplast: Ammoniac: cum Hydrargyro.* L. Adulterations. Two varieties are met with in the market, that in tears, *guttæ ammoniaci*, which ought to be white, clear, and dry; and that in lumps, *lapis ammoniaci*, which sells for one-third the price of the former, being very impure, and generally adulterated with common resin, from which it may be purified by softening the mass in a bladder, which is immersed in boiling water, and straining it while fluid.

AMMONIÆ SUBCARBONAS. L. Carbonas Ammoniæ, E. D.

*Subcarbonate of Ammonia.**

Qualities. *Form*, white, semi-transparent masses, which, on exposure to air, effloresce; *Odour*, pungent, and peculiar; *Taste*, acrid but cooling. Chemical Composition. It will be found to vary materially in its composition according to the temperature employed for its preparation; the quantity of alkali varying from 20 to 50 per cent. Mr. Phillips considers the *Sub*-carbonate of ammonia to be a *Sesque*-carbonate, composed of 3 atoms of carbonic acid, 2 atoms of ammonia, and 2 of water; or that it is a definite compound of *Carbonate* and *Bi-carbonate*, one atom of each. One hundred parts, by experiment, consist of 54·2 *carb: acid*, 29·3 *Ammonia, and* 16·5 *water;* if we consider it as a *Sesque-carbonate*, its constitution, according to Dr. Wollaston's scale, will be 55·72 *Carbonic Acid*, 29 *Ammonia*, 15·28 *water*. Solubility. According to Duncan it is soluble in twice its weight of cold water; Mr. Phillips states four times; the mean of these will be found nearly correct. Its solubility, however, is increased by increase of temperature, but when dissolved in boiling water, it effervesces and undergoes a partial decomposition; it is quite insoluble in alcohol, and hence on the addition of spirit to a strong solution, a dense coagulum is produced. Incompatible Substances. It is decomposed by *acids*, *fixed alkalies* and their *carbonates*, *lime*, *magnesia*, *alum*, *supertartrate of potass*, and all the *aci-*

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* Godfrey's Smelling Salts. This highly pungent preparation is obtained by resubliming the common subcarbonate of ammonia with pearlash, and a proportion of rectified spirit. The sub-carbonate of potass in this case, abstracts a fresh portion of carbonic acid from the ammoniacal salt. Its atomic composition has not yet been ascertained, but it will probably be found to consist of equal atoms carbonic acid and ammonia.

dulous salts, *sulphate of magnesia*, *acetate*, *submuriate*, and *oxymuriate of mercury*, *superacetate of lead*, *tartarized iron*, and the *sulphates of iron and zinc*. If it be added to decoctions and infusions they must be previously cooled. Forms of Exhibition. Since by exposure to air, its virtues are impaired, it ought not to be kept in powdered mixtures; in the form of pill it is preserved much longer, especially if it be combined with some vegetable extract. Uses. It is stimulant, antispasmodic, diaphoretic, powerfully antacid, exceeding in this respect the fixed alkalies, and in large doses it is emetic. It is highly useful as a stimulant in those gastric affections which supervene habits of irregularity and debauchery; combined with opium it affords a powerful resource in protracted diarrhœa attended with debility of the alimentary canal; and in cases of muscular atony so frequently witnessed as the *sequela* of chronic rheumatism, ammonia, in large doses, offers the best remedy; I have moreover witnessed the beneficial effects of this remedy in hoarseness depending upon relaxed states of the throat. It is also useful in syncope and hysteria, in the form of smelling salts; with respect to its application for making saline draughts, see *Acid: Citricum*. Dose, grs. v to ℈j: to produce emesis ʒss. See *Form*. 48, 49, 83, 152. Officinal Preparations. *Liquor Ammoniæ subcarbonatis*, L. *Liquor Ammoniæ acetatis*, (☞)L.E.D. *Cuprum Ammoniatum*, (☞) L.E.D. Adulterations. This salt ought to be entirely volatilized by heat; if any thing remain it may be considered impure; it ought also to be free from all fetor; should this not be the case it may be corrected by subliming it in conjunction with powdered charcoal; there is at present a large quantity of this impure article in the market, which has been manufactured from the residue sold by the gas-light companies.* When long exposed to the air, the excess of ammonia upon which its odour depends, escapes, carbonic acid is absorbed, and an inodorous neutral carbonate remains.

AMMONIÆ MURIAS. L.E. Sal Ammoniacum. D. vulgo *Sal Ammoniac*.

Qualities. *Form*, dense striated concavo-convex cakes, which are persistent in the air, or crystallized conical masses;

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* It appears that this is not the only article that has suffered in its quality by the cheap materials which have been brought into the market from those works. I understand that the practical chemist can now obtain little or no *Naphtha* from the Barbadoes Tar, owing to its adulteration with the residue of the gas light process.

in this latter form it generally contains other salts, especially muriate of lime, which render it deliquescent. *Taste*, bitter, acrid, and cool. CHEMICAL COMPOSITION. In consequence of the present unsettled opinions respecting the nature of muriatic acid and ammonia, and the changes which they undergo by combination with each other, the composition of this salt is involved in much obscurity. According to Dr. Thomson, it consists of equal volumes of muriatic acid gas, and ammoniacal gas, although he has subsequently observed that from the peculiar properties of the substance, it may be a compound of *Chlorine* and *Ammonium* (the hypothetical base of ammonia.) Unlike all the other ammoniacal salts, it does not undergo decomposition by heat. SOLUBILITY. f℥j of water at 66° dissolves about two drachms and a half; at 212° it dissolves its own weight; it is also soluble in 4½ parts of alcohol; its solution in water is accompanied by considerable reduction of temperature. INCOMPATIBLE SUBSTANCES. The sulphuric and nitric acids unite with the ammonia, and disengage the muriatic acid, whilst ammonia is disengaged by the action of potass and its carbonate, carbonate of soda, lime, magnesia, &c. which combine with its muriatic acid; with oxymuriate of mercury it combines and increases its solubility, see *Hydrarg. Oxy-murias.* When united with super-acetate of lead, it decomposes it, and a muriate of lead is precipitated. It is obvious also that nitrate of silver, and all the metallic salts whose bases form insoluble compounds with muriatic acid, are incompatible with it. USES. Rarely employed as an internal remedy, externally it is employed in lotions, either for the cold produced during its solution, in which case it should be applied as soon as the salt is dissolved, or for the stimulus of the salt, on which principle it acts as a powerful discutient in indolent tumours, (*Form.* 146.) It is also an ingredient in a very useful plaster, in which it undergoes chemical decomposition; this plaster consists of *Soap* ℥j, *lead plaster*, ʒij, liquified together, to which, when nearly cold, are added of *muriate of ammonia* finely powdered ʒss. The alkali of the soap enters into combination with the muriatic acid of the muriate of ammonia, and forms thereby muriate of potass, or soda, and ammoniacal gas (on which the virtue of the plaster depends) is slowly but abundantly liberated, acting as a powerful stimulant and rubefacient; it should be applied immediately after it is formed, and be renewed every twenty-four hours, otherwise the intention is lost; (*Pharmacopœia Chirurgica.*) I have often applied this plaster with evident advantage to the chest in pulmonary affections, and I wish to recommend it to the attention of practitioners. It is very useful also in that rheumatic affection of the muscles of the chest, which is so frequently met with in persons in advanced life; during the last winter I was consulted in two cases where the distress after exercise was so considerable as to resemble angina pectoris. Officinal Preparations. *Ammoniæ Subcarbonas*, (𝕾) L.E.D. *Liquor: Ammoniæ* (𝕸) L. *Aqua Ammoniæ*. E.D. *Hydrarg: præcip: alb.* (𝕾) L. *Alcohol Ammoniatum*, (𝕾) E.D. *Ferrum Ammoniat:* (𝕲) L.E.D. Adulterations. This salt, if pure, may be entirely volatilized by a low heat; the *sulphate of ammonia*, however, as it is also volatile, cannot be discovered except by the muriate of barytes, which will indicate its presence by a copious precipitate.

AMYGDALÆ DULCES. } Varieties of "Amygdalus Communis." { Sweet and Bitter Almonds.
AMYGDALÆ AMARÆ.

Qualities. The *sweet almond* is inodorous, and has a sweet, bland taste; the *bitter almond*,* when triturated with water, has the odour of the peach, and a pleasant bitter flavour. Chemical Composition. Boullay has lately confirmed the analogy which Proust had stated to exist between the emulsion of sweet almonds and human milk, viz. the former consists of sweet oil 54, albumen 24, sugar 6, gum 3, with traces of acetic acid; the indigestible property of the almond depends upon its albuminous matter. The *bitter almond*, in addition to those constituents, contains hydro-cyanic acid, (Prussic acid,) in union with a peculiar volatile oil, upon which its narcotic properties depend; but this deleterious element is so modified by the natural state of combination in which it exists with sweet oil and albumen, that they may be eaten without inconvenience. The bitter almond has long been regarded as an antidote to drunkenness; Plutarch states it as a fact on the authority of his physician Claudius. Other bitters were however supposed to possess similar powers in this respect, hence the *Poculum Absinthiatum* to which we have before alluded. See vol. I. p. 107. Both sorts of almonds yield by expression a large quantity of fixed oil, which is perfectly mild. See *Oleum Amygdal.* The water distilled from the bitter almond, when strongly impregnated, has been found to exert a deleterious action on the human body, and to prove fatal to many animals. SOLUBILITY. By trituration with water a milky mixture is produced, (*an emulsion,*) for which purpose the sweet almonds should be previously freed from their cuticle (*blanched*) and this ought to be performed by infusing them in tepid water: for when hot it separates a portion of their oil, as is evident from their being thus rendered yellow, and the emulsion is therefore more liable to ferment, and be decomposed. ℥ij of almonds saturate about f℥vj of water; since, however, this extemporaneous preparation is tedious and inconvenient, the London Pharmacopœia very judiciously directs a confection to be ready prepared, ʒj of which, when triturated with f℥j of water, immediately forms an elegant emulsion. See *Mistura Amygdal.* Almonds form a useful intermedium for suspending in water many substances which are of themselves not miscible with it, as camphor, and several of the gum resins; they also assist in the pulverization of refractory substances, as Ipecacuan, &c. OFFICINAL PREPARATIONS. *Confectio Amygdalarum.* L. *Emulsio Camphoræ* ([illegible].) E. *Emulsio Acaciæ Arab:* E.D.

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* Noyau,—*Crème de Noyau.* Bitter Almonds blanched 1 oz. Proof spirit half a pint, Sugar 4 oz. It is sometimes coloured with cochineal. The foreign Noyau although differently prepared, is indebted to the same principle for its qualities. It is a liquor of a fascinating nature, and cannot be taken to any considerable extent without danger; the late Duke Charles of Lorraine nearly lost his life from swallowing some "*Eau de Noyau*," (water distilled from Peach kernels) too strongly impregnated. *Journal des Debats*, 22, *Decembre*, 1814.

AMYGDALÆ PLACENTA. *Almond Cake* is the substance left after the expression of the oil, which when ground forms ALMOND POWDER, so generally used for washing the hands.*

OIL OF BITTER ALMONDS. For obtaining this oil, the expressed cake is submitted to distillation, when a highly volatile, pungent oil, passes over. See *Oleum Amygdalæ Amaræ.*

AMYLUM. L.E.D. (Triticum Hybernum
Starch. *Amylum.*†)

QUALITIES. *Form,* white columnar masses; *Odour* and *Taste,* none. CHEMICAL COMPOSITION. Fecula is one of the proximate principles of vegetable matter, and *Starch* is the fecula of wheat.‡ SOLUBILITY. It is soluble in boiling water, forming with it, a semi-transparent, insipid, inodorous and gelatinous paste, very susceptible of mouldiness, but which is retarded by the addition of alum; it is insoluble, but falls to powder in cold water; nor is it dissolved by alcohol or ether; although potass dissolves starch, yet the solution of it is not disturbed by potass, carbonate of potass, nor ammonia, but an alcoholic solution of potass produces a precipitate; acetate of lead, and infusion of galls occasion also precipitates. Starch is susceptible of several interesting and important changes; thus, if it be exposed to heat until its colour becomes yellow, its properties are so far altered that it is no longer insoluble in cold water; and according to the experiments of Saussure, if it be mixed with water, a spontaneous decomposition takes place, and a quantity of sugar is formed, amounting in weight to one half of the starch employed, in addition to which a peculiar gummy matter results, and a substance intermediate between gum and starch, to which the name of *Amidine* has been given. Starch moreover is convertible into saccharine matter by the agency of sulphuric acid. Uses. Being demulcent it is generally employed as a vehicle for the exhibition of opium in the form of enema. The ordinary blue starch is coloured by a solution of smalt and alum, and is unfit for medicinal use; formerly it was tinged yellow with saffron or tumeric, but this went out of fashion on the execution of the famous midwife Mrs. Collier, who was hanged in a ruff starched with that colour. (*Gray's Supplement.*)—Officinal Preparations. *Mucilago Amyli.* L.E.D. *Pulvis Tragacanth: comp:* ([illegible]) L. *Pil: Hydrargyri* ([illegible]) E. *Trochisci Gummos:* E.

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* ALMOND PASTE. This Cosmetic for softening the skin and preventing chaps, is made as follows: Bitter almonds blanched 4 oz., the white of an egg, rose water and rectified spirit, equal parts, as much as is sufficient.

† For the derivation of this term, and remarks thereon, see Vol I. p. 58.

‡ The fecula of various grains are employed as articles of diet for the sick, e. g. SAGO, prepared from the pith of the *Cycas Circinalis,* its granular form is imparted to it by passing it, when half dry, through a coarse sieve. SALOP from the *Orchis Mascula* TAPIOCA from the root of the *Jatropa Manhiot.* By expressing the root of this plant, the juice of which is extremely acrid, and

It has been lately observed that *Iodine* is a delicate test of the presence of starch; if a drop or two of a solution of this substance in alcohol be added to an aqueous solution of starch, a blue compound is formed which eventually precipitates. Iodine may therefore be employed for ascertaining the goodness of starch, a test which is very important, for much of what is sold under the name of starch, does not possess its

baking the cake that is left, an alimentary substance is prepared called Cassava, the peculiar merit of which, like tapioca, is to swell and soften in water, and thus to form an excellent pudding. Arrow Root is from the *Maranta Arundinacea.* The arrow root however, usually sold, is the fecula of potatoes; 100 lbs. of which would yield about 10 lbs of fecula, and it is worthy of remark that for this purpose frozen potatoes answer as well as those not spoiled by the frost. Dr Ainslie, in his Materia Medica of Hindostan, informs us that "an excellent Arrow root, if it may be so called, is now prepared in the Travancore country from the root of the *Curcuma Angustifolia*, no way inferior to that obtained from the *Maranta Arundinacea.*"

peculiar characters; it ought however to be stated, that the blue indication is prevented from taking place by a variety of different bodies, as *Arsenious acid, corrosive sublimate of mercury*, &c. &c.

ANETHI SEMINA, L.E.

(*Anethum Graveolens. Semina.*)

Dill Seed.

These seeds when dry have an aromatic sweetish odour, and a warm pungent taste, qualities residing in an essential oil, which is extracted by distillation with water and by digestion with alcohol; the bruised seeds yield their flavour to boiling water by simple infusion. The seeds are but rarely used. The distilled water is a valuable carminative for children.

ANISI SEMINA. L.E.D.

(*Pimpinella Anisum. Semina.*)

Anise Seeds.

Like the dill seeds, warm and carminative; water extracts very little of their flavour; rectified spirit the whole. It may be remarked in this place that the value of aniseed, as well as all those seeds which yield essential oil by distillation, may be estimated by their specific gravity, the heaviest yielding the largest proportion of oil; a chondrometer employed by cornchandlers might be very conveniently applied to such a purpose. The seeds imported from Spain, which are smaller than the others, contain most oil, and are to be preferred.

ANTHEMIDIS FLORES. L.E.

(*Anthemis Nobilis.*)

Chamomili Flores. *Chamomile Flowers.*

QUALITIES. The *Odour* of the flowers is strong and fragrant; *Taste*, bitter and aromatic, with a slight degree of warmth. CHEMICAL COMPOSITION. The active principles are essential oil, resin, and bitter extractive. SOLUBILITY. Both water and alcohol take up the active parts of the flowers; hot water, by infusion, dissolves nearly one-fourth of their weight, but boiling dissipates the essential oil, on which account they should never form an ingredient in a decoction. USES.

The flowers given in substance are said to have cured intermittents; they are however but rarely used; externally they are applied in fomentations. See *Infusum Anthemidis*. OFFICINAL PREPARATIONS. *Decoctum Anthemidis nobilis*. E.D. *Infusum Anthemidis*. L. *Extractum Anthemidis*. L.E. *Oleum Anthemidis*. L.* There is a great variety in the quality and price of chamomile flowers; those which are large and whitish are to be preferred as the freshest; by keeping they become invalid, and are deprived of their aromatic principle and essential oil. They are always inferior in wet seasons. The double flowered varieties are also less powerful than the single kind, since the qualities reside in the disc florets.

ANTIMONII SULPHURETUM. L.

Sulphuret of Antimony.

QUALITIES. This article appears in the market in conical loaves, which are dark gray externally, but internally possess a bladed structure and considerable brilliancy; the Edinburgh and Dublin colleges direct this substance to be levigated with water, and kept in the state of powder; it should however never be purchased in that form, as it is not unfrequently adulterated with sulphuret of lead, whereas it cannot contain such admixture when its form is characteristically crystalline and bladed. CHEMICAL COMPOSITION. Antimony 100, Sulphur 35·572. From the time of Basil Valentine to the present, this preparation has been known in the market by the name of *Antimony*, a name which it is evident can only with propriety be applied to the pure metal. SOLUBILITY. It is insoluble in water and alcohol; since however it is slightly acted upon by vegetable acids, cups were formerly made of it, which imparted to wine that stood in them for some time an emetic quality. USES. It is principally employed for the preparation of the other antimonial combinations, for which purpose it is more eligible than the metal itself, as being less contaminated with metallic impurities. Its medicinal energies depend altogether upon the state of the stomach, and must therefore be extremely uncertain; when it meets with any acid in the stomach, it acts with extreme violence, a circumstance which requires precaution. In times of remote antiquity it was used by females as a black pigment for staining the eyelashes, a custom which continues to this day in the east.* It is at present given to horses, mixed with their food, to make their coats smooth. OFFICINAL PREPARATIONS. Dr. Black constructed a table representing a view of all the preparations whose basis was antimony; many of these however have fallen into disuse, and the nomenclature of all is changed. The following arrangement of the medicines prepared from the sulphuret of antimony,† is presented to us by Mr. Thomson, in his London Dispensatory. 1. BY TRITURATION, *Sulphuretum Antimonii Præparatum.* E.D. 2. BY THE ACTION OF HEAT WITH PHOSPHATE OF LIME, (oxidized) *Pulvis Antimonialis.* L.D. *Oxidum Antimonii cum Phosphate Calcis.* E. 3. BY THE ACTION OF ALKALIES, (oxidized) *Antimonii Sulphuretum Præcipitatum.* L.E. *Sulphur Antimoniatum Fuscum.* D. 4. BY THE ACTION OF ACIDS, (oxidized,) *Antimonii Oxydum.* L. *Oxydum Antimonii Nitro-muriaticum.* D. *Antimonium Tartarizatum.* L. *Tartris Antimonii, olim Tartarus Emeticus.* E. *Tartarum Antimoniatum,* sive *Emeticum.* D. *Liquor Antimonii Tartarizati.* L. *Vinum Tartritis Antimonii.* E.

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* CHAMOMILE DROPS. The nostrum sold under this name is a spirit flavoured with the essential oil of Chamomile. It is very obvious that it cannot possess the bitter tonic of the flowers.

ADULTERATIONS. The importance of employing this article in a state of great purity for the preparation of so many active and valuable medicines, is obvious. It ought to be entirely volatilized by a red heat: *Lead* is discovered by its imparting to the antimony a foliated, instead of a bladed texture, and from not being vaporizable; *Arsenic,* by the garlic odour emitted when thrown upon live coals; or by the numerous tests mentioned under the history of that article; *Manganese* and *Iron,* from not being vaporizable, and from other tests: the most usual adulteration is black oxide of iron, or the scoriæ of that metal, "*Smithy dust.*"

ANTIMONII SULPHURETUM PRÆCIPITATUM. L.E.

Sulphur Antimoniatum Fuscum. D.

Precipitated Sulphuret of Antimony.

QUALITIES. *Form,* a brilliant orange coloured powder; *Taste,* slightly styptic but inodorous. CHEMICAL COMPOSITION.

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* The manner of doing it among the Turks, is described by *Shaw* and *Russel.* Chateaubriand also remarks, "The women of Athens appear to me smaller and less handsome than those of the Morea, their practice of *painting the orbits of the eyes blue,* and the ends of the fingers red, is disagreeable to the stranger." Dr. Badham has also given us an interesting note upon this subject in his learned Translation of Juvenal. Sat. II. l. 141. See also the present work, Vol. 1. p. 70.

† The Sulphuret of Antimony is an ingredient in SPILSBURY'S DROPS.—

Very complicated attractions are exerted during the preparation of this substance; the result of which is an hydro-sulphuret of Oxide of Antimony, with excess of sulphur. **Solubility.** It is quite insoluble in water. **Uses.** According to the dose, it is a diaphoretic, cathartic, or emetic; it is, however, less certain than many other preparations, and, unless in combination with mercury for cutaneous affections, is not very often employed. **Incompatible Substances.** All acids and acidulous salts increase its emetic properties; when therefore acid is suspected to prevail in the primæ viæ, it should be combined with soap, magnesia, (*Form:* 128,) or aromatic confection; on the contrary, the confection of roses, and vehicles containing acids, should be carefully avoided. **Form of Exhibition.** Pills. **Dose**, grs. i to v. **Officinal Preparations.** *Pilula Hydrargyri Sub-Muriatis*, (𝕻) L. **Adulterations.** It is often sophisticated with chalk and other extraneous matter; it ought not to effervesce with acids; it should be entirely vaporizable by heat, and its colour should be that of bright orange. A spurious article is vended which consists of sulphur and sulphuret of antimony coloured with Venetian red.

ANTIMONIUM TARTARIZATUM. L.

Tartris Antimonii. E. Tartarum Antimoniatum. D.

Tartar Emetic.[*]

Qualities. *Form*, crystals whose primitive form is the regular tetrahedron, although it assumes a variety of secondary forms. *Colour*, white. *Odour*, none. *Taste*, slightly styptic and metallic; on exposure to the air the crystals slightly effloresce; thrown upon burning coals, they become black, and afford metallic antimony. **Chemical Composition.** This is involved in much doubt and obscurity; it is stated in the various dispensatories to be a triple salt, consisting of tartaric acid, oxide of antimony,[†] and potass, and which therefore,

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See *Hydrargyri Oxymurias.* Dr. Duncan also observes that it seems to constitute a quack remedy which has acquired some reputation in Ireland for the cure of cancer, where it is used as an external application to the sore.

[*] This saline body was first made known by Adrian de Mynsicht in his *Thesaurus Medico-chymicus*, published in 1631; although it appears probable that the preparation was suggested by a treatise, entitled "*Methodus in Pulverem*," published in Italy in 1620. This book, written by Dr. Cornachinus, gives an account of a method of preparing a powder which had been invented by Dudley, Earl of Warwick, and which had acquired considerable celebrity in Italy; this powder was composed of *Scammony*, *Sulphuret of Antimony*, and *Tartar*, triturated together.

[†] There is a *Tartrate of Antimony*, but it can scarcely be made to crystallize; it easily assumes a gelatinous form; and it may be here observed that

says Mr. Thompson, on the principles of the reformed nomenclature, ought to be termed a *tartrate of antimony and potass.* The truth of these views, however, is extremely questionable. I am inclined to believe with Gay Lussac, that in the various metalline compounds, of which super-tartrate of potass is an ingredient, this latter substance acts the part of a simple acid; an opinion which receives much support from the great solvent property of cream of tartar, and from the striking fact that it is even capable of dissolving various oxides which are insoluble in tartaric acid, of which the protoxide of antimony is an example. According then to this view, tartar emetic is a salt composed of bi-tartrate (*super-tartrate*) of potass, which acts the part of an acid, and protoxide of antimony: from the experiments of Mr. Phillips, it would appear that 100 parts of the bi-tartrate will dissolve 70 of the protoxide. In this state of doubt, it must be admitted that no name can be more appropriate than *Antimonium Tartarizatum.* SOLUBILITY. Much discrepancy of opinion exists upon this subject, owing probably to the variations and incidental impurities to which this salt is liable. Dr. Duncan, who selected very pure specimens for examination, states that it is soluble in three times its weight of water at 212°, and in fifteen at 60°. This solution, when the salt is pure, is perfectly clear and transparent, but if long kept, unless a considerable portion of spirit be added, it undergoes decomposition; a precipitate indeed sometimes takes place very rapidly, but this is generally tartrate of lime, an incidental impurity, derived from the supertartrate of potass. INCOMPATIBLE SUBSTANCES. *Mineral Acids, Alkalies, and their Carbonates, most of the Metals, Soaps, Hydro-Sulphurets, and many infusions and decoctions of bitter and astringent Vegetables*, e. g. f℥j, of the decoction of yellow bark is capable of completely decomposing ℈j of this salt, and of rendering it inert.* Berthollet has accordingly recommended the immediate exhibition of this decoction when an overdose of the salt has been taken; and Orfila has given a very satisfactory case in which this antidote succeeded. Infusion and tincture of galls throw down curdled and inert precipitates of a dirty white colour, inclining to yellow. Rhubarb is equally incompatible; the extract of this substance therefore never ought to be em-

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Antimony is one of those metals whose oxides seem to combine with difficulty, and to form compounds of little permanency with acids unless there be present at the same time an alkali or earth; and their solutions in most cases, yield, on dilution, a white precipitate.

[*] The compound of *Tartarized Antimony* and *Bark*, is said to purge, and to constitute the "*Bolus ad Quartanus*" of the French physicians.

ployed in forming pills of tartar emetic : but it deserves notice that this salt is not decomposed by the infusions of gentian or wormwood. The *Alkaline Sulphates*, provided they be perfectly neutral, produce no disturbance in solutions of *tartar emetic*, and therefore cannot be considered incompatible with them; if there be any excess of acid, as in *alum*, *bi-sulphate of potass*, &c. then its decomposition is effected, and a white insoluble sulphate of antimony is precipitated. It appears therefore that the famous "Emetio-purgative" of the French school, consisting of sulphate of soda, and tartarized antimony in solution, is by no means the unchemical mixture which some have considered it to be, and that it really produces its effects from the operation of its original ingredients, and not from that of the compounds, (*Sulphate of Antimony*, *Tartrate of Soda*, *and Sulphate of Potass*) which have been erroneously supposed to result. Forms of Exhibition. Solution is its best form, see *Liquor Antimonii Tartariz.* Dose. It either vomits, purges, or sweats, according to the quantity exhibited, thus gr. $\frac{1}{4}$ will, if the skin be kept warm, promote a diaphoresis; gr. $\frac{1}{2}$ will procure some stools first, and sweating afterward; and gr. j will generally vomit and then purge, and lastly sweat the patient; in very minute doses, as gr. $\frac{1}{16}$ or $\frac{1}{12}$ combined with squill and ammoniacum, it acts as an expectorant, see *Formulæ* 1, 2, 3, 8, 60. It is decidedly the most manageable, and the least uncertain of all the antimonial preparations, and the practitioner would probably have but little to regret were all the other combinations of this metal discarded from our Pharmacopœias. Tartar emetic, when triturated with lard, in the proportion of ʒiss or ʒij to ℥j of the latter, forms a very powerful rubefacient, occasioning a pustular eruption on the skin, and proving very serviceable in deep-seated inflammation; or the application may be made by dusting a piece of adhesive plaster with tartarized antimony, taking care to leave a margin untouched that it may more firmly adhere. Officinal Preparations. gr. j. is contained in f℥ss of *Liquor Antimonii Tart*: L. and *Vinum Tartratis Antimonii*. E.* Adulterations. It should be always purchased in its crystalline form; and a solution of it in distilled water ought to furnish a copious gold-coloured precipitate with sulphuret of ammonia; a precipitate soluble in nitric acid, with acetate of lead; and a white and extremely thick precipitate, dissolving with facility in pure nitric acid, with lime water. If the crystals deliquesce, the presence of other salts may be inferred. *M. Serullas*, in a memoir of which there is a copious extract in the *Journal de Pharmacie* for 1821, has shown that all the antimonial preparations used in medicine, except carefully crystallized *Tartar-Emetic*, contain more or less arsenic, which metal was originally combined with the antimony in the ore, and has continued pertinaciously associated with it through all its modifications.

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* Norris's Drops. A solution of tartarized antimony in rectified spirit, and disguised by the addition of some vegetable colouring matter. I am credibly informed that the original recipe contained opium, but that which I have examined, and which was procured from a respectable agent, yielded no indications of its presence.

AQUA. Water.

Water, from its extensive powers as a solvent, never occurs in a state of absolute purity, although the nature and degree of its contamination must necessarily vary according to circumstances and situation. It is generally found holding earthy matter in a state of mechanical suspension, or saline and other bodies in chemical solution. The usual varieties of common water are classed and defined by Celsus; and modern chemists have not found any reason to reject the arrangement. "*Aqua levissima pluvialis est; deinde fontana; tum ex flumine, tum ex puteo; posthæc ex nive, aut glacie; gravior his ex lacu; gravissima ex palude.*"

1. Rain Water. *Aqua Pluvialis*, when collected in the open fields, is certainly the purest natural water, and consequently of the least specific gravity; the bodies which it holds in solution are, carbonic acid, a minute portion of carbonate of lime, with traces of muriate of lime. Dew is said to be water saturated with air. Rain water ought, however, to be boiled and strained, whenever it is collected near large towns; Hippocrates gives this advice, and M. Margraaf of Berlin has shown the wisdom of the precaution by a satisfactory series of experiments.

2. Spring Water. *Aqua Fontana*, in addition to the substances detected in rain water, generally contains a small proportion of muriate of soda, and frequently other salts; but the larger springs are purer than smaller ones, and those which occur in primitive countries, and in siliceous rocks, or beds of gravel, necessarily contain the least impregnation. An important practical distinction has been founded upon the fact, that the water of some springs dissolves soap, whilst that of others decomposes and curdles it; the former has been termed *soft*, the latter *hard* water; soft water is a more powerful solvent of all vegetable matters, and is consequently to be preferred for domestic as well as medicinal purposes; the brewer knows well

from experience how much more readily and copiously *soft* water will dissolve the extractive matter of his malt. Horses, by an instinctive sagacity, always prefer soft water, and when by necessity or inattention they are confined to that which is *hard*, their coats become rough and ill conditioned, and they are frequently attacked with the gripes. Pigeons also refuse hard water, when they have been accustomed to that which is soft.*

3. River Water. *Aqua ex Flumine*, being derived from the conflux of numerous springs and rain water, generally possesses considerable purity; that the proportion of its saline ingredients should be small, is easily explained by the precipitation which must necessarily take place from the union of different solutions; it is, however, liable to hold in suspension particles of earthy matter, which impair its transparency, and sometimes its salubrity; this is particularly observed of the Seine, the Ganges, and the Nile.†

4. Well Water. *Aqua ex Puteo*, is essentially the same as spring water, being derived from the same source; it is, however, more liable to impurity from its stagnation, or slow infiltration;‡ hence our old wells furnish much purer water than those which are more recent, as the soluble particles are gradually washed away. Mr. Dalton observes that the more any spring is drawn from, the *softer* the water becomes.

5. Snow Water. *Aqua ex Nive*, has been supposed to be unwholesome,|| and in particular, to produce bronchocele, from the prevalence of that disease in the Alps, but it does not

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* Hard water has a tendency to produce diseases in the spleen of certain animals, especially sheep; this is the case in the eastern side of the island of Minorca, as we are informed by Cleghorn. The mischievous tendency of bad water, where it cannot be corrected by some chemical process, would seem to be best counteracted by bitter vegetables. Virey supposes that this circumstance first induced the Chinese to infuse the leaves of the tea plant.

† Alpini informs us that Elephantiasis is endemial in Egypt; Galen ascribed it to the impure waters of the Nile, and Lucretius adopted the same opinion.

"Est Elephas morbus, qui propter flumina Nili
Gignitur Ægypto in Medio.

‡ Dr. Percival observes that bricks harden the softest water, and give it an aluminous impregnation; the common practice of lining wells with them is therefore very improper, unless they be covered with cement.

|| The same strumous affection occurs at Sumatra, where ice and snow are never seen; while on the contrary, the disease is quite unknown in Chili and Thibet, although the rivers of these countries are chiefly supplied by the melting of the snow with which the mountains are covered. The trials of Captain Cook, in his voyage round the world, prove the wholesomeness of *Ice water* beyond a doubt; in the high southern latitudes he found a salutary supply of fresh water in the ice of the sea, "this melted ice," says Sir John Pringle, "was not only sweet but soft, and so wholesome as to show the fallacy of human reasoning unsupported by experiments."

appear upon what principle its insalubrity can depend; the prejudice, however, is a very ancient one, for Hippocrates observes that snow or ice water is unwholesome, in consequence of its finer particles being evaporated, and lost during its solution: it appears to differ only from rain.water in being destitute of air, to which water is certainly indebted for its briskness, and perhaps for many of its good effects upon animals and vegetables. The same observations apply to *Ice Water*.

6. **Lake Water.** *Aqua ex Lacu*, is a collection of rain, spring, and river waters, contaminated with various animal and vegetable bodies, which from its stagnant nature have undergone putrefaction in it.

7. **Marsh Water.** *Aqua ex Palude* being the most stagnant is the most impure of all water, and is generally loaded with decomposing vegetable matter.

To what extent the impurities of water are capable of influencing its salubrity, has been a subject of interesting inquiry from the age of Hippocrates to the present day. To many of these natural contaminations, too much importance has been certainly attached; it is an affected refinement to suppose that the presence of minute portions of such earthy and calcareous salts, as generally occur in solution, can impart any noxious quality to water;* whilst on the contrary, animal and vegetable impurities, or earthy bodies in a state of mechanical suspension, cannot fail to prove injurious, and must be regarded as the true "SCELERA AQUARUM." Guided by false analogi[illegible] many have supposed that they recognised the origin of all calcareous diseases in the earthy impurities of water; the researches, however, of chemistry have removed this delusion, by demonstrating that the substances found in water never enter into the composition of urinary calculi.† Metallic and other accidental contaminations are necessarily highly injurious, and the water in which their presence is suspected, should be submitted to the most careful examination.

For the purification and preservation of water, numerous methods have been adopted; the mechanical impurities may be removed by filtration, which is performed through porous stones, or alternate layers of sand or charcoal; muddy water may be also cleared by adding a few grains of alum to each pint,* and in that proportion, the water is not rendered in the least disagreeable; when water has contracted a putrid smell, it may be rendered sweet by agitating it with a small portion of magnesia, or with black oxide of manganese, in the proportion of 1½ parts to 250 parts of water. Dr. Black observes that nitrate of silver, which is one of the most antiseptic substances known, will preserve water from putrefaction for ever, and that it may at any time be separated therefrom in a few minutes by adding a small lump of common salt; this fact in itself is curious, but the experiment is too hazardous to be recommended. Dr. Alston prefers lime, as a preservative of the water, and proposes to remove it by the addition of a carbonate of magnesia; Dr. Henry has however found that it is more economically precipitated by the introduction of a current of carbonic acid into the cask. As that peculiar property of water which is termed *hardness*, generally depends upon the presence of *sulphate of lime*, the addition of an alkaline carbonate twenty-four hours previous to its being used, will be found to restore it, or if it should depend upon *super-carbonate of lime*, long ebullition, without any addition, will be found sufficient for its cure.

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* I take this opportunity of observing, that I have made analyses of several of those springs in Cornwall, which have from time immemorial enjoyed a reputation in the neighbourhood for curing diseases, among which were the waters of Holy-well, so named from its supposed virtues, and those of Permiscen Bay, equally extolled for their medicinal qualities. But I have only been able to detect minute quantities of carbonate of lime, derived from infiltration through banks of calcareous sand. See *Transactions of the Royal Geological Society of Cornwall, Vol. I.*

† See "Remarks on the Pump water of London," by W. Heberden, M.D. in the 1st vol. of the *Medical Transactions*; also Acad. Royale des Scienc. 1700, Hist. pag. 68, Perrault Vitruve. L. VIII. c. 6.

Water when kept for a long time in casks, especially on long voyages, is partially decomposed, and a volume of carburetted hydrogen is evolved,† imparting to such water the peculiar smell and taste which characterize it; this decomposition may in a great degree be obviated by charring the interior of the water casks; it is however to a great degree prevented in the Navy by substituting iron tanks for wooden vessels. In Pharmacy it ought to be remembered, that whenever common water is employed it should not be *hard;* filtered rain water may be recommended as the most eligible on such occasions.

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* I am informed by a respectable chemist in this town, that he sells a large quantity of alum for this very purpose, as well as to publicans for the sake of clearing their spirituous liquors; for the same end, we are told that the wine merchants in Paris put into each cask of wine as much as a pound of alum.

† This is particularly the case with respect to the water of the River Thames; for as it contains but a small proportion of saline matter, it is remarkably soft, although it holds suspended mud, and vegetable and animal debris, which occasion it to undergo a violent change on being kept: a large volume of carburetted and sulphuretted hydrogen gases is evolved, and it becomes black and insufferably offensive, upon racking it off however into large earthen vessels, and exposing it to the air, it gradually deposites a quantity of black slimy matter, and becomes as clear as crystal, and perfectly sweet and palatable, and is exceedingly well adapted for sea store. "THE NEW RIVER WATER" contains a small proportion of muriate of lime, carbonate of lime, and muriate of soda; it differs also in its gaseous contents: 100 cubic inches of New River Water contain 2.25 of carbonic acid, and 1.25 of common air, whereas the water of the Thames contains rather a larger quantity of common air, and a smaller proportion of carbonic acid.

AQUA DISTILLATA. L.E.D. Distilled Water.

Qualities. *Taste*, vapid from the absence of air, and slightly empyreumatic in consequence probably of the presence of a small quantity of extractive matter which has undergone partial decomposition; a fluid-ounce weighs 454½ grains. Medicinal Use. In extemporaneous prescriptions, distilled water should be always ordered whenever the formula contains any of the following substances:—*Acidum Sulphuricum; Acidum Citricum; Antimonium Tartarizatum; Argenti Nitras; Cuprum Ammoniatum; Ferrum Tartarizatum; Hydrargyri Oxy-murias; Liquor Ammoniæ; Liquor Plumbi Acetatis; Liquor Potassæ; Plumbi Super-Acetas; Solutio Muriatis Barytæ; Vinum Ferri; Zinci Sulphus; Ferri Sulphas.* Distilled water ought also to be employed in preparations where much water is evaporated, as in the formation of extracts, since the residual matter of common water will remain mixed with the product of the process, and uselessly add to its bulk, or even in some cases produce in it chemical changes; unless however under such circumstances, common water purified by filtration should be ordered, as the air which it contains imparts to it a pleasant and sprightly flavour. In making infusions or decoctions, it is very important that the water should be free from those impurities which impart to it *hardness*, and which render it a far less powerful solvent of vegetable matter, nor indeed can resinous substances be mixed with such water, even when assisted by a mucilaginous medium. On which account, in prescribing emulsions, it may perhaps be prudent to direct the employment of distilled water. Tests of its Purity. Its transparency ought not to be disturbed by the addition of nitrate of silver, or muriate of barytes.

AQUA MARINA. Sea Water.

Until the late able researches of Dr. Murray, we possessed but an imperfect knowledge of the composition of sea water; it is not therefore surprising that the analysis performed by different chemists should be found to be so materially at variance; the true cause of such discordance is now easily understood, for it appears, that in the examination of a mineral water or any compound saline solution, the substances obtained from it are not necessarily the original ingredients, but frequently the products of new combinations established by the operation of analysis, and that consequently the nature of the results obtained may vary according to the modes in which such analysis has been conducted, or even according to the degree of dilution in which the saline substances exist.* The elements of the salts contained in a pint of sea water are, *Lime* 2·9, *Magnesia* 14·8, *Soda* 96·3, *Sulphuric Acid* 14·4, *Muriatic Acid* 97·7, total 226·1 grains, and supposing these elements to be combined in the modes which Dr. Murray's views appear to establish, the saline contents of a pint of sea water may be expressed as follows, *Muriate of Soda* 159·3, *Muriate of Magnesia* 35·5, *Muriate of Lime* 5·7, *Sulphate of Soda* 25·6, grains, total 226·1 grains; besides such saline contents, it is contaminated with various animal and vegetable bodies, in consequence of which it becomes, when long kept, highly offensive; it ought also to be stated that Dr. Wollaston has discovered the presence of a minute proportion of potass in sea water; and Dr. Marcet has more lately detected ammonia in combination with muriatic acid. MEDICAL USE. As a cathartic, a pint is the ordinary quantity, which should be taken in the morning, at two doses, with an interval of half an hour between each;—this quantity contains half an ounce of purgative salt, of which about three-fourths are muriate of soda, but it is much more active than a similar portion of any artificial combination. In procuring sea water for medicinal purposes, there is a precaution, the importance of which experience has suggested to me, that it be not hastily drank on the beach, before the particles of sand, with which under such circumstances it is generally mixed, are allowed to subside; from the neglect of this precaution I have witnessed serious consequences. The most important advantages of sea water are derived from its external use as a bath.

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* The law which determines such combinations has been investigated with singular ingenuity and success by Dr. Murray, (*Transactions of the Royal Society of Edinburgh*, 1816.) Berthollet had already established the important fact, that combinations are often determined by the force of cohesion, in such a manner, that in principles acting on each other, those on which this force operates most powerfully, in relation to the fluid which is the medium of action, are combined together; hence from a knowledge of the solubility of the compounds which substances form, we may predict what combinations will be established when they act on each other, *those always combining which form the least soluble compounds*. It is for the extension of these views, and for the useful application of them, that we are indebted to Dr. Murray, who justly observes, that if the force of cohesion can so far modify chemical attraction, as to establish among compound salts dissolved in any medium, those combinations whence the least soluble compounds are formed, we are entitled to conclude that the reverse of this force, i. e. the power of a solvent, may produce the opposite effects, or cause the very reverse of these combinations to be established, so that in a concentrated medium the least soluble will be formed, and in a dilute one, the more soluble compounds will be established. Hence follows the simple rule by which the actual state in which saline bodies exist in a solution may be determined, viz. *that in any fluid containing the elements of compound salts, the binary compounds existing in it will be generally those which are most soluble in that fluid, and the reverse combinations will only be established by its concentration favouring the influence of cohesion.* It appears that by simply evaporating a saline solution we may produce changes in its composition, and obtain products which never existed in its original state of dilution; thus, suppose *muriate of magnesia* and *sulphate of soda* to be dissolved in water, as is actually the case in the water of the ocean, and the solution to be concentrated by evaporation from heat; the combinations of *sulphate of magnesia* and *muriate of soda*, being on the whole less soluble in water, this circumstance of inferior solubility, or the force of cohesion thus operating, actually determines the formation of these compounds, and the production of sulphate of magnesia from the bittern is to be explained upon this principle. Since it appears therefore that the influence of solubility is most important, temperature, to whose dominion it is under all circumstances subject, must necessarily be alike powerful; let us exemplify this fact by the action of the very salts under consideration; it has been just stated that *muriate of magnesia* and *sulphate of soda* decompose each other in a *concentrated* solution at a high temperature, producing muriate of soda and sulphate of magnesia, but at temperatures below 32° the reverse actually takes place, muriate of soda and sulphate of magnesia reacting, and being converted into sulphate of soda and muriate of magnesia; a fact evidently owing to the relation of the solubility of these salts to temperature. Muriate of soda has its solubility scarcely altered, either by heat or cold, sulphate of soda is, in these respects, completely the reverse; hence at an elevated temperature, muriate of soda is the least, and sulphate of soda is the most soluble salt, whilst at a low temperature, the reverse of this happens. All the circumstances of this investigation are most interesting; the medical practitioner will at once perceive its importance, as enabling him to appreciate

AQUÆ DISTILLATÆ. L.D.

AQUÆ STILLATITIÆ. E. *Distilled Waters.*

These are waters impregnated with the essential oils of vegetables, and are principally designed as grateful vehicles for the exhibition of more active remedies; ample directions for preparing them are given in the several Pharmacopœias, and if they be rectified by redistillation they may be kept for several years; the usual mode of preserving them is by adding spirit, which has also the incidental advantage of preventing them from being frozen during the winter season. Some recommend a film of the essential oil to be diffused over the water's surface. They may be extemporaneously prepared by adding to water what have been called *Essences*, which consist of

the real nature of saline solutions, and even in many instances, to preserve their identity. See *Aquæ Minerales*.

essential oil and alcohol, or by rubbing any essential oil with ten times its weight of sugar, or, what answers still better, of magnesia; when however they are so prepared they never retain their transparency. The properties of each water may be learnt by referring to the vegetable from which it is distilled.

AQUÆ MINERALES. Mineral Waters.

Although all waters that flow from the earth, are, as they contain mineral bodies in solution, strictly speaking, *mineral* waters, yet this term is conventionally applied to such only as are distinguished from spring, lake, river, or other water, by a peculiarity in colour, taste, smell, or any obvious properties, or by the medicinal effects which they produce, or are known to be capable of producing.

To the medical practitioner the history of these waters is most interesting and instructive, involving highly important subjects of chemical and physiological inquiry. These waters are without doubt indebted for their medicinal virtues to the operation of the substances which they hold dissolved, but this is so materially aided by the peculiar state of dilution in which they exist, as well as by the mere bulk and temperature of the water itself, as to render extremely doubtful the success of every attempt to concentrate their powers by evaporation. To what extent dilution may modify the chemical condition of saline solutions has been satisfactorily demonstrated by the researches of Dr. Murray (see *Aqua Marina*,) and to what degree an increase in the solubility of any remedy may influence its medicinal properties has been considered at some length, in the first vol. of this work, (*page* 208.) It is certain that, in general, soluble salts are capable of exerting a much more powerful effect upon the animal economy, than those which are insoluble; on which account, the earthy muriates, especially that of lime, are among the most active ingredients of mineral waters. Although chemical analysis has frequently from its own imperfection failed in ascertaining their presence, it seems probable that *muriate of lime* and *sulphate of soda* exist in all those springs that furnish, by the usual methods of examination, *sulphate of lime* and *muriate of soda;* for the same reasons it is equally probable that iron, which in certain waters has been supposed from the analysis to exist as a *carbonate*, is in its native solution a true *muriate;* this is undoubtedly the fact with respect to the Bath waters. Is it then surprising, that medical practitioners should hitherto have failed in their attempts to emulate, by artificial arrangements, the medicinal efficacy of active mineral springs? For the investigation of the true composition of mineral waters the researches of Dr. Murray furnish a simple and elegant formula. *Determine by precipitants the weight of the acids and bases, suppose them united in such a manner that they shall form the most soluble salts, and these salts will constitute the true saline constituents of the water under examination.*

Mineral waters admit of being divided into four classes, viz.

1. Acidulous; owing their properties chiefly to carbonic acid; they are tonic and diuretic, and in large doses produce a transient exhilaration; the most celebrated are *Pyrmont*, *Seltzer*, *Spa*, *Carlsbad*, and *Scarborough*.

2. Chalybeate; containing iron in the form of *sulphate*, *carbonate*, or *muriate*;* they have a styptic, inky taste. *Hartfell* near *Moffat*, *Peterhead*, *Tunbridge*, *Brighton*, *Cheltenham*, *Bath*, *Lemington Priors*, *Castle Horneck*, near *Penzance*, &c.

3. Sulphureous Waters derive their character from sulphuretted hydrogen, either uncombined, or united with lime, or an alkali, *Engien*, *Aix-la-Chapelle*, *Harrowgate*, *Moffat*.

4. Saline; mostly purgative, and are advantageously employed in those hypochondriacal and visceral diseases that require continued and moderate relaxation of the bowels; *Cheltenham*, *Leamington*, *Seidlitz*, and all brackish waters.

Some springs, as those of *Bath*, *Matlock*, and *Buxton*, owe their virtues rather to temperature than to any other cause, and others, as *Malvern*, to the diluent power of the water.

[MINERAL WATERS OF THE UNITED STATES.

The mineral waters of the United States have, within a few years, attracted the particular attention of Physicians and Chemists. Like those of other countries, they are found to possess diversified properties; and as medicinal agents, they are considered not inferior to any in the world. The author's division of mineral waters into *Acidulous*, *Chalybeate*, *Sulphureous*, and *Saline*, is no doubt a convenient arrangement for general purposes, but these qualities are so frequently combined in the mineral waters of this country, that it is difficult to give them a determinate classification. Though springs impregnated with iron, and holding various other substances in solution, exist in many parts of the Union; yet on this occasion, it is intended to notice those only which are celebrated for their medicinal qualities. Among these, the waters of *Ballston-Spa* and *Saratoga*, in the State of New-York, are pre-eminent. The fountains at these places are situated on the verge of the secondary, and not far from the transition formation in the county of Saratoga; and as far as they have been examined, appear, with few exceptions, to possess the same qualities, differing only in the quantity of the substances common to them all. (*Steel.*) It is here proper to remark, that the discordant results of the analyses by different chemists, and particularly by Seaman, Mead, Cutbush, Dana, and Steel, leave the true composition of these waters still problematical. As the researches of Dr. Steel, however, appear to have been conducted with great care and attention to accuracy, his residence at the springs affording him the best opportunities for repeated experiment, we shall here present the results of his analysis of the principal fountains both of *Ballston* and *Saratoga*. The quantity of water in his experiments was one gallon.

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* There is a precaution respecting the preservation of these waters for analysis with which the chemist ought to be acquainted; it will be fully explained by the relation of the following anecdote. M Wurza, on examining some bottles of Chalybeate water, could detect no signs of iron in them, and on seeking for the cause of this circumstance, he discovered it in the astringent nature of the corks which had combined with the metalic substance, and abstracted it from the water.

BALLSTON.

I. PUBLIC SPRING.—Temperature 50° Fah.

Muriate of Soda - -	159
Carbonate of Soda - -	9
Carbonate of Lime - -	75.5
Carbonate of Magnesia -	2·5
Carbonate of Iron - -	7
	253 grs.

Carbonic acid gas 210 cubic inches.

II. LAW'S SPRING.—Temperature 52°.

Muriate of Soda - -	142
Carbonate of Soda - -	10
Carbonate of Lime - -	64.5
Carbonate of Magnesia -	1.5
Carbonate of Iron - -	6
	224 grs.

Carbonic acid gas 220 cubic inches.

III. **New Spring.**—Temperature 50°.—Muriate of Soda 145; Carbonate of Soda 12; Carbonate of Lime 61.5; Carbonate of Magnesia 9; Carbonate of Iron 7.5=235 grs. Carbonic acid gas 159.5 cubic inches. In this water there is said to be a trace of silex and alumine.

SARATOGA.

I. **Congress Spring.**—Temperature 50°.—Muriate of Soda 471.5; Carbonate of Lime 178.476; Carbonate of Soda 16.5; Carbonate of Magnesia 3.356; Carbonate of Iron 6.163=676 grs. Carbonic acid gas 343 cubic inches.

II. **Columbian Spring.**—Temperature 50°.—Muriate of Soda 201.5; Carbonate of Soda 22.5; Carbonate of Lime 121; Carbonate of Magnesia 1.5; Carbonate of Iron 7.5=354 grs. Carbonic acid gas 236 cubic inches.

III. **High Rock Spring.**—Temperature 48°.—Muriate of Soda 210; Carbonate of Soda 18; Carbonate of Lime 115; Carbonate of Magnesia .5; Carbonate of Iron 4.5=348 grs. Carbonic acid gas 243 cubic inches.

The other springs at Saratoga, viz. the Washington, Hamilton, Flat Rock, President, Red, Taylor, Jackson, Alexander, Walton, and Ellis, yield by analysis all the principles stated above, but in different quantities. Near Law's spring at Ballston, is a fountain which, in addition to the muriate of soda, and the carbonates of soda, lime, and iron, and carbonic acid gas, contains 7 cubic inches of sulphuretted hydrogen in a gallon. Another fountain, a few miles from the Congress spring at Saratoga, affords 11 cubic inches of hepatic gas.

The above waters are chiefly prescribed in bilious and dyspeptic disorders, and also in certain forms of gout, chronic rheumatism, scrofula, dropsy, palsy, chlorosis, and ill-conditioned ulcers of the extremities. In many cases their use is singularly efficacious; and if judiciously employed, we have no doubt their sanative qualities will fully sustain the celebrity they have acquired. (See *Steel's Analysis of the Mineral Waters of Saratoga and Ballston*, &c.)

The waters of Schooley's mountain, New-Jersey, possess medicinal properties scarcely inferior to those of Ballston and Saratoga. The public are indebted to Professor M'Nevin for the best account of these waters. The following summary will exhibit the result of his analysis. A quantity of the water, when evaporated, yielded 16.50 grains of a brown light powder, which, on examination, was found to consist of

Extractive 0.92; Muriate of Soda 0.43; Muriate of Lime

2.40; Muriate of Magnesia 0.50; Carbonate of Lime 7.99; Sulphate of Lime 0.65; Carbonate of Magnesia 0.40; Silex 0.80; Carbonated Oxyd of Iron 2.00; Loss 0.41=16.50.

The springs at Schooley's mountain are resorted to for relief in diseases of the digestive organs, and in calculous disorders. Abundant evidence of their efficacy in these latter complaints is furnished by Professor M'Nevin in his paper on this subject read before the Literary and Philosophical Society of New-York, and published in the 1st volume of their Transactions.

Among the thermal waters of the United States, those of New-Lebanon, New-York, are entitled to consideration. They issue from the side of a hill, and are remarkably pellucid. The quantity discharged from the fountain amounts to eighteen barrels in a minute. Their temperature is 72° of Fahrenheit. According to the Analysis of Dr. Mead, two quarts of the water contain

Muriate of Lime 1; Muriate of Soda 1¾; Sulphate of Lime 1½; Carbonate of Lime ¾=5 grs.

Azotic Gas 13; Atmospheric air 8=21 cubic in.

The thermal waters of Buncome county, North Carolina, are worthy of particular notice. They are found upon the margin of a river called French Broad, about thirty-two miles from Ashville. Their temperature is 104 of Fahrenheit. The late Dr. Edward D. Smith, who examined their properties in 1818, states that their appearance at the fountain was limpid, and that no smell was perceivable, though he was assured that in some seasons they emit a strong odour. From three quarts of the water Dr. Smith obtained, by evaporation, a fixed product amounting to 28 grains, which by analysis afforded Muriates of Lime and Magnesia 4; Sulphate of Magnesia 6; Sulphate of Lime 14½; Insoluble Matter 2½; Loss 1=28 grs.

The remedial virtues of the Buncome waters are no doubt dependent upon their temperature, rather than the substances which they hold in solution. Used as a bath they appear to have been eminently beneficial in chronic rheumatism, palsy, and various other maladies in which warm bathing is usually advantageous. (See *American Journal of Science and Arts*, Vol. 3, p. 117.)

In that region west of the Mississippi called the Arkansaw Territory, springs have been discovered whose remarkably elevated temperature render them objects of great curiosity. They are situated in N. Lat. 34°, upon a small creek which flows into the river Washitaw. Sixty different fountains are said to exist within the distance of four hundred yards along the east side of the creek. The country is extremely rude and mountainous. The temperature of the waters is much greater in summer than in winter. In the month of January, 1818, their heat was found to vary in the different fountains from 104° to 151° of Fahrenheit. In summer, the water is hot enough to draw tea or coffee, cook eggs, and even meat. Vegetables are seen growing in the hottest of the springs, and a peculiar insect is said to live and sport in them. (See *Major Long's Communication*, *American Monthly Magazine*, Vol. 3, p. 29.) Bringier states that the heat varies in the different fountains from 186° to 192°, referring probably to their temperature in summer. (See *American Journal of Science and Arts*, Vol. 3, p. 29.)—I.]

ARGENTI NITRAS. L. Nitras Argenti. E.D.

Fused Nitrate of Silver, olim, *Lunar Caustic*.

QUALITIES. Fused nitrate of silver is in small cylinders of a dark gray colour, and presenting, when broken across, a crystalline structure. *Odour*, none; *Taste*, intensely bitter, austere, and metallic; it tinges the skin indelibly black; when perfectly free from copper, it is not deliquescent. CHEMICAL COMPOSITION; oxide of silver 70, nitric acid 30. SOLUBILITY. In an equal weight of water, at 60°; it is also soluble in alcohol. INCOMPATIBLE SUBSTANCES. *Fixed alkalies* and *alkaline earths*, the *muriatic*, *sulphuric*, and *tartaric* acids, and all the salts which contain them; *Soaps*, *arsenic*, *hydro-sulphurets*, *astringent vegetable infusions*, *undistilled waters*. The solutions of nitrate of silver are not disturbed by ammonia, the *ammoniuret* being very soluble; nitrate of silver tinges the skin and hair black, and has been frequently employed for the latter purpose;* it likewise forms the basis of permanent ink.† MEDICAL USES. Tonic, antispasmodic, and escharotic; it is said to prove efficacious in epilepsy, but during a trial for several years in the Westminster hospital, I never could discover its virtues; many of the cases in which it has been supposed to have been successful, probably derived advantage from the purgative medicines which were simultaneously administered. It possesses a bitter taste, and it has been said to act like vegetable bitters upon the digestive organs, and to offer a resource in dyspeptic complaints. It is principally useful as an external application, and may be considered as the strongest and most manageable caustic that we possess, whilst in solution it acts as a useful stimulant in indolent ulcers; and being possessed of the power of coagulating animal matter, it does not spread to any extent, and is therefore extremely convenient where a large eschar is to be avoided. A weak solution of this metallic salt has lately been strongly recommended by a French surgeon, as a remedy for piles of long standing. **Forms of Exhibition.** For internal use, in pills made with crumb of bread, with the addition of some sugar, to prevent the mass from being too hard. **Dose**, gr. $\frac{1}{8}$, gradually increased to gr. j. **Adulterations.** *Copper* may be always suspected when it deliquesces, and is to be immediately detected by its solution assuming a blue colour, when supersaturated with ammonia. The sticks should be preserved in closely stopped phials, and covered with soft and dry paper. **Antidote.** When this substance has been taken in excess, muriate of soda is its true antidote; indeed so completely does it decompose, and separate it from water, that if a saturated solution of nitrate of silver be filtered through common salt, it may be afterward drunk with impunity. This circumstance alone, would of necessity render nitrate of silver a very uncertain remedy; and yet it is evident that the basis of this salt is occasionally absorbed, for there are several cases upon record, in which the oxyd of silver has been deposited in the rete mucosum, and given a purple hue of a very singular appearance to the patient; I have lately witnessed an instance of this kind in a lady who had taken large doses of the nitrate, for the purpose of curing a dyspeptic complaint; and several other similar cases stand recorded in different works.

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* For the same purpose [illegible] French employ a pomatum prepared with the oxide of bismuth, and it is said to answer the intention.

† PERMANENT INK FOR MARKING LINEN. This preparation is a solution of nitrate of silver, thickened with *sap green*, or *cochineal*. The *preparing liquid*, with which the linen to be marked is previously wetted, is a solution of soda, boiled with gum, or some animal mucilage. It is a curious circumstance that if *potass* be used for this purpose, the marking ink will run.

ARMORACIÆ RADIX. L.E. (*Cochlearia Armoracia*)

Raphanus Rusticanus, D. *Horse*[*] *Radish Root.*

QUALITIES. *Taste*, hot and acrid; *Odour*, pungent. CHEMICAL COMPOSITION. All its virtues depend upon an essential oil. SOLUBILITY. Both water and alcohol extract its active principles, but they are dissipated by decoction. MEDICAL USES. As a stimulant in paralysis it is often useful; Sydenham found it successful in dropsies which were consequent on intermittent fevers; Cullen recommends a syrup made with the infusion of horse-radish, to remove that species of hoarseness which depends upon local relaxation; Dr. Withering extols an infusion of this root in milk as a cosmetic both safe and effectual. INCOMPATIBLE SUBSTANCES. *Alkaline Carbonates*; *Oxymuriate of Mercury*; *Nitrate of Silver*; the *Infusion of Galls*, and of *Yellow Cinchona Bark*, produce precipitates with the infusion of this root. FORMS OF EXHIBITION. In substance, scraped or swallowed whole, or in infusion.[†] DOSE of the substance ʒj, of an infusion f℥ij. See *Infus Armoraciæ comp:* OFFICINAL PREPARATIONS. *Infusum Armoraciæ comp:* L. *Spiritus Armoraciæ comp:* L.D.

ARSENICI OXYDUM. L. Oxydum Arsenici. E. Arsenicum. D. *White Arsenic*, vulgo *Arsenic*. *Arsenious Acid.*

QUALITIES. *Form*, shining semivitreous lumps, breaking with a conchoidal fracture, and when reduced to powder, bearing some resemblance to white sugar! *Taste* acrid and corrosive, leaving an impression of sweetness. *Specific gravity* 3·7; it is volatilized at the temperature of 383° *Fah.* and by a strong heat is vitrified into a transparent glass capable of crystallizing in tetrahedra, with truncated angles. In the state of vapour, it is quite inodorous, although it is asserted in many chemical works of authority to yield a smell like that of garlic:

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[*] *Horse*-radish: *horse*-mint; *bull*-rush; &c. These epithets are Grecisms; by *ιππος* and *βους*, i. e. horse and bull, when prefixed to any word, signified no more than great; thus is the great Dock, Hippo-lapathum, and the horse of Alexander from the size of his head was named Bucephalus.

[†] An infusion of horse-radish is a very ancient remedy in disorders of the stomach. In Paulus Ægineta we shall find a letter written by Carystius Antigonus, in which it is highly recommended for such a purpose.

the fact is, that the alliaceous, or garlic-like smell is wholly confined to *Metallic* arsenic in a state of vapour, and whenever the arsenious acid seems to yield this odour, we may infer that its decomposition has taken place; this happens when it is projected upon ignited charcoal, or when heated in contact with those metallic bodies which readily unite with oxygen, as *Antimony* and *Tin*. It is stated by Orfila and other chemists, that if it be projected upon heated copper, the alliaceous odour is evolved. This assertion is undoubtedly true, but the fact requires to be explained with more precision, or we may fall into an important error respecting it. The phenomenon takes place only when the copper is in a state of ignition, at which temperature its affinity for oxygen enables it to reduce the arsenious acid; for I find by experiment that if a few grains of this substance be heated on a plate of copper, by means of a spirit lamp or blow-pipe, no odour is perceptible, for the whole of the acid is dissipated before the copper can acquire a sufficiently exalted temperature to deoxidize it. If the arsenious acid be heated on a plate of zinc, the smell is not evolved until the metal is in the state of fusion; if instead of these metals we employ in our experiments those of gold, silver, or platina, no alliaceous smell whatever is produced, at any temperature. It however, deserves particular notice, that the flame of the spirit lamp is itself capable of decomposing the oxyd, in consequence of the operation of its hydrogen; a fact which is very likely to betray the chemist into the fallacious belief that the oxyd does yield the odour in question.* It is probable that arsenical vapours which yield this peculiar odour are less noxious than those which are inodorous, but I am not aware that the knowledge of this fact can be applied to any purpose of practical importance.† Chemical Composition. This substance possesses many of the essential habitudes of an acid, as for instance, that of combining with the pure alkalies to saturation, it is therefore very properly denominated *Arsenious Acid.* It may be farther acidified by distilling it with nitrous acid, and the compound which results is a white concrete substance termed *Arsenic Acid;* from experiments on the quantity of oxygen absorbed by metallic arsenic, during its conversion into these two compounds, instituted by Proust and Davy, it appears that the *arsenious* acid consists of about 25 of oxygen and 75 of metal, and the *arsenic* acid of 33 of oxygen, and 67 of metal; or, the quantity of metal being the same, that the oxygen in the latter compound is to that in the former nearly as three to two. SOLUBILITY. We have but lately been set right upon this point; Klaproth has shown that it requires for its solution 400 parts of water at 60°, and only 13 at 212°, and moreover, that if 100 parts of water be boiled on the arsenious acid, and suffered to cool, it will retain three grains in solution, and deposite the remainder in tetrahedral crystals; this fact shows the importance of employing boiling water in every chemical examination of substances supposed to contain arsenic. It is soluble in alcohol and oils, the former taking up two per cent. with lime water it produces a white precipitate of *arsenite of lime*, which is soluble in an excess of arsenious acid; with magnesia it forms a soluble *arsenite*, which proves very virulent. The poisonous effects of arsenious acid are so amply detailed in medical works, that it would be superfluous to dwell upon them in this place; it may, however, be interesting and useful to record an account of the pernicious influence of arsenical fumes upon organized beings, as I have been enabled to ascertain in the copper smelting works, and tin burning-houses of Cornwall. This influence is very apparent in the condition both of the animals and vegetables in the vicinity; horses and cows commonly lose their hoofs, and the latter are often to be seen in the neighbouring pastures crawling on their knees, and not unfrequently suffering from a cancerous affection in their rumps, whilst the milch cows, in addition to these miseries, are

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* The chemist may satisfy himself of this fact by heating some arsenious acid on a piece of platina foil, and alternately raising and depressing it into the blue flame of the spirit, when corresponding changes in odour will take place.

† It will probably afford a satisfactory explanation of the circumstance mentioned by Dr. Percival, that *the workmen who solder silver filligree with an arsenical alloy, are never affected by the fumes.* Dr. Percival does not appear to have been in the least aware of the probable reason of this fact; he says, "This solder is melted by the flame of a lamp directed by a blow-pipe; the greatest part of the arsenic is evaporated by the blast and flame, and some part also of the rest of the solder, and yet the men appear to enjoy as good health, and to live as long as other artists! Among other examples of the truth of this observation, I lately saw in the manufactory at the Soho near Birmingham, a man of more than fifty years of age, who had soldered silver filligree for thirty-five years, and had regularly during that period, passed from eight to ten hours daily in his occupation, and yet he was fat, strong, active, cheerful, and of a complexion by no

means sickly; neither he nor his brother artists, use any means to counteract the effect of their trade." Dr. Rotheram, in a letter to Dr. Percival, comments upon this fact, and says, "how far the fluxes used in soldering the filligree may fix the parts of the arsenic, or from what cause these workmen might escape, I dare not say, but I should notwithstanding strongly suspect the fumes of this very volatile and caustic mineral to be very prejudicial."— I have shown in the preceding page that arsenious acid is readily decomposed when heated in contact with an oxidable metal, and I apprehend that this fact will explain the reason why the fumes of the alloy in question are disarmed of their virulence.

soon deprived of their milk; the men employed in the works are more healthy than we could *a priori* have supposed possible; the antidote upon which they all rely with confidence, whenever they are infested with more than an ordinary portion of arsenical vapour, is *sweet oil*, and an annual sum is allowed by the proprietors in order that it may be constantly supplied; this opinion is not solitary, for Tachenius relates that the poisonous effects, such as convulsions, gripes, and bloody stools, with which he was seized, from exposure to the fumes of arsenic, were relieved by milk and oil.

It deserves notice that the smelters are occasionally affected with a cancerous disease in the scrotum, similar to that which infests chimney-sweepers, and it is singular that Stahl, in describing the putrescent tendency in the bodies of those who die from this poison, mentions in particular the gangrenous appearance of these parts. It is a very extraordinary fact, that previous to the establishment of the copper works in Cornwall, the marshes in their vicinity were continually exciting intermittent fever, whereas since that period a case of ague has not occurred in the neighbourhood; I have heard it remarked by the men in the works, that the smoke *kills* all fevers. The fact is here stated without any other comment than that the agricultural improvements which have taken place in the district are not sufficient to afford any clue to the explanation of the circumstance. **Medical Uses.** Much has been said upon this subject, and the propriety and safety of its exhibition has been often questioned; there can be no doubt but that the greatest circumspection is required in the practitioner who administers it, and it ought not, in my opinion, to be employed until other remedies have failed; that it is capable of accumulating in the system is very evident, and this, in certain habits, may predispose the patient to serious diseases; the form in which it is most manageable and least dangerous, is that of solution. See *Liquor Arsenicalis.* Some practitioners have exhibited it in substance, made into pills, by rubbing one grain with ten of sugar, and then beating the mixture with a sufficient quantity of crumb of bread to form ten pills, one of which is a dose. The Chinese and other oriental nations form the sulphuret of arsenic (*realgar*) into medical cups, and use lemon juice, after it has stood some hours in them, by way of cathartic. As an external application, arsenic has been long extolled in the cure of cancers;* but it deserves notice in this place, that repeated experiments have proved that arsenic kills* more rapidly when applied externally to an abraded part, than when internally administered. See vol. i. p 164. The arsenical caustic, so extensively used under the sanction of the late Mr. Justamond, in cases of open cancer, consisted of two parts of antimony, and one of arsenious acid, fluxed together in a crucible, and afterward levigated, and reduced to the requisite degree of mildness by the addition of powdered opium. When the system is under the influence of arsenic, the following symptoms will appear, viz. thickness, redness, and stiffness of the palpebræ, soreness of the gums, ptyalism, itching over the surface of the body, restlessness, cough, pain in the stomach and bowels, headach, and I have also occasionally noticed paucity of urine, and even strangury, a fact of which I find no mention in other authors. Strange as it may appear, *Arsenic* has been inhaled, together with the vapours of frankincense, myrrh, and

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* Plunkett's Ointment, consists of arsenious acid, sulphur, and the powdered flowers of the *Ranunculus Flammula*, and *Cotula Fœtida*, levigated and

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made into a paste with the white of an egg, and applied, on a piece of pig's bladder, to the surface of the cancer.

Pate Arsenicale. This favourite remedy of the French surgeons consists of 70 parts of cinnabar, 22 of *sanguis draconis*, and 8 of arsenious acid, made into peste with saliva, at the time of applying it. This combination, observes a periodical writer, is similar, with the exception of the ashes of the soles of old shoes, to that recommended by Father Cosmo under the name of "*Pulvis Anti-carcinomatosa.*"

Davidson's Remedy for Cancer, arsenious acid, and powdered hemlock.

* In the Journal de Medicine, the following case of a woman is related who was killed by her husband having insinuated powdered arsenic into the vagina, at the moment of enjoying the conjugal rites. "A woman at *Leneux, departement de l'Ourthe*, aged 40, having died after a short illness attended with considerable tumefaction of the genital parts, uterine hemorrhage, vomiting, and purging, the body was inspected by order of the mayor, when the surgeons reported that they found the vulva in a state of gangrene, the abdomen much distended with air, and the intestines inflamed and grangrenous. The culprit was arrested, convicted, and executed." In the Acts of the Society of Medicine of Copenhagen, a similar crime is recorded, committed also by a peasant; in this latter case, although some small pieces of arsenic were found within the vagina, yet, some doubting the possibility of this species of poisoning, the magistrates consulted the College of Medicine of Copenhagen, who decided the question in the affirmative, by instituting a series of experiments upon horses.

Singleton's Eye Salve, or Golden Ointment. Under this name is sold a preparation which consists of sulphuret of arsenic (*orpiment*) with lard, or spermaceti ointment. The *Unguentum Hydrargyri Nitrico Oxydi* of the London College is also sold under the same title.

In Paris, arsenic forms the basis of several blistering cerates. Such applications cannot be safe. Lionardo di Capoa tells us of a child killed by the violent vomiting and purging, occasioned from a slight wound made in the head by a comb wet with oil, in which arsenic had been infused for the purpose of killing vermin. The arsenical amulets which were worn during the plague of London (see vol. i. p. 45) are said by some cotemporary writers to have occasionally produced mischievous effects. Accordingly Crato (*Epistol* 168) observed an ulcer of the breast caused by this application; Verzascha, violent pains, and fainting fits; Diemerbroeck (*De Peste Histor*: 99 *Annotat.*) and Dr. Hodges (*De Peste Lond. pag.* 239) death itself.

those of other gums, during a paroxysm of asthma! This extraordinary practice arose from the practitioner mistaking the gum juniper, or *Vernix* of the Arabians, which by their medical authors was prescribed in fumigations under the name of *Sandarach*, for the σανδαρακη of Aristotle, which was a sulphuret of arsenic.

Adulterations. It is frequently sophisticated with chalk, gypsum, or sulphate of barytes; the fraud is instantly detected by its not being entirely volatilized by heat, or by any insoluble residuum occurring in preparing the *Liquor Arsenicalis*, according to the directions of the pharmacopœia. To many the adulteration of so active a substance may seem unimportant, but in consequence of its being thus rendered a medicine of variable activity, it is one of the most dangerous frauds which can be committed; a very unpleasant circumstance lately occurred from such a cause in one of our public institutions: arsenic had been obtained from the shop of a respectable chemist, who had not usually supplied the establishment, for the purpose of preparing the arsenical solution; the article happened to be less adulterated than that which had been previously employed; the solution, however, was prepared in the usual way, and the usual dose was continued, when the patients were soon seized with violent pains in the bowels, and the cause was not detected until by an examination of the bottle the usual sediment was not discovered.

Antidotes. Late researches have shown that *sulphuret of potass*, on which physicians have placed so much reliance, merits no confidence. The great indication to be fulfilled in all cases of poisoning is to excite vomiting, and to administer liquids, which are the least liable to act as solvents of the acrid matter, on which account lime water presents itself as a very appropriate fluid. The subject, however, is very fully considered in the first volume of this work, to which I am very desirous of directing the attention of the medical practitioner: see page 164.

Methods of detecting the presence of Arsenious Acid.

1. *By its reduction to a metallic state.* Mix a portion of the suspected powder with three times its weight of *black flux* (consisting of finely powdered charcoal one part, dry carbonate, of potass, two parts) put the mixture into a thin glass tube, hermetically closed at one end, about eight inches in length, and one-fourth of an inch in diameter; should any of the powder adhere to the sides of the tube, it must be care-

fully brushed off with a feather, so that the inner surface of its upper part may be perfectly clean and dry; the closed end of the tube, by way of security, may be thinly coated with a mixture of pipe-clay and sand, but this operation is not absolutely necessary; the open extremity is to be loosely plugged with a piece of paper; the coated end must be now heated on a chafing-dish of red hot coals, when the arsenic, if present, will sublime, and be found lining with a brilliant metallic crust the upper part of the tube; a portion of this reduced metal, if it be arsenic, will, when laid on heated iron, exhale in dense fumes which are characterized by a strong smell of garlic.

It merits particular notice, that in reducing by the above process the arsenious acid to the state of metal, the presence of potass in the flux is very essential, since it forms immediately an *arsenite of potass*, and thereby fixes the arsenious acid, and prevents it from being volatilized before the temperature is sufficiently high to enable the charcoal to decompose it; an ignorance of this fact has not unfrequently proved a source of disappointment and fallacy.

Another method of identifying *white arsenic* by metallization, is to form at the moment of its reduction, an alloy with copper, which is easily effected in the following manner,—Mix the suspected powder with black flux, as in the former experiment, and place the mixture between two polished plates of copper, bind them tight together by iron wire, and expose them to a low red heat; if the included substance contained arsenic, a silvery white stain will be left on the surface of the copper, which is an alloy of the two metals. If in this, as in the former experiment, charcoal be employed without the addition of a fixed alkali, the result may, for the same reason, prove unsatisfactory.

2. *By the application of certain Reagents or Tests, to its Solutions.*

A great and important question has arisen in medical jurisprudence, whether any chemical proofs of the presence of *white arsenic*, short of its actual reduction to the state of metal, can be depended upon, or ought to be received as evidence in the courts of criminal law. After a full experimental investigation of the subject, and an impartial review of all the facts which bear upon the question, I feel no hesitation in declaring it to be my conviction, that *white arsenic may be detected without any fear of fallacy, by a proper application of certain tests*, and that the contrary opinion is entirely founded in error, and unsupported by experiment, as will more fully appear in the sequel.

(A) *Fused Nitrate of Silver*, or *Lunar Caustic*—For this test we are indebted to Mr. Hume of London, who first gave it to the public in the Philosophical Magazine for May, 1809, vol. xxxiii. His method of applying it is as follows: into a clean Florence flask introduce two or thee grains of the suspected powder, to which add about eight ounces of rain or distilled water, and heat the solution until it begins to boil, then while it boils frequently shake the flask, and add to the hot solution a grain or two of sub-carbonate of potass, agitating the whole to make the mixture uniform. Pour into a wine glass about two table spoonsful of the solution, and touch the surface of the fluid with a stick of lunar caustic. If arsenic be present, a beautiful yellow precipitate will instantly proceed from the point of contact, and settle towards the bottom of the glass as a floculent and copious precipitate.

By this test the 60th part of a grain may be satisfactorily recognised in two ounces of water. The presence of some alkali is essential to the success of the experiment, since arsenious acid is unable, by the operation of simple affinity, to decompose the nitrate of silver.* The validity of this test has been questioned on the following grounds, which shall be fairly examined in order.

Objection 1. *The alkaline phosphates are found to produce precipitates with silver, analogous in colour and appearance to the arsenite of silver.* This is undoubtedly the case when the experiment is performed in the manner just stated, but there are other reagents which will immediately distinguish these bodies, as will be seen under the history of the *Ammoniuret of silver;* I have also shown that there is a mode of so modifying the application of the silver test itself, that no error or doubt can arise in the use of it from the presence of phosphoric salts.† My method consists in conducting the trial on writing paper, instead of in glasses, thus—drop the suspected fluid on a piece of white paper, making with it a broad line; along this line a stick of lunar caustic is to be slowly drawn several times successively, when a streak is produced of a colour resembling that known by the name of *Indian Yellow;* and this is equally produced by the presence of arsenic and that of an alkaline phosphate, but the one from arsenic is rough, curdy, and flocculent, as if effected by a crayon, that from a phosphate homogeneous and uniform, resembling a water-colour laid smoothly on with a brush; but a more important and distinctive peculiarity soon succeeds, for in less than two minutes the phosphoric yellow fades into a *sad green*, and becomes gradually darker, and ultimately quite black; while on the other hand, the arsenical yellow remains permanent, or nearly so, for some time, when it becomes brown. In performing this experiment, the sunshine should be avoided, or the transitions of the colour will take place too rapidly. It would be prudent also for the inexperienced operator to perform a similar experiment on a fluid known to contain arsenic, and on another with a phosphoric salt, as a standard of comparison. In this way the nitrate of silver, without the intervention of any other test, is fully capable of removing every ambiguity, and of furnishing a distinguishing mark of difference between the chemical action of arsenic, and that of the phosphates. Mr. Hume states that he has repeated this experiment to his entire satisfaction,* and that, in a late unfortunate case of poisoning, he derived considerable information by its application. The laborious author of the London Dispensatory accepts it as an excellent test, but observes that it is rendered more luminous by brushing the streak lightly over with liquid ammonia immediately after the application of the caustic, when, if the arsenic be present, a bright queen's-yellow is produced which remains permanent for nearly an hour; but that when the lunar-caustic produces a white-yellow before the ammonia is applied, we may infer the presence of some alkaline phosphate, rather than that of arsenic. One of the great advantages of this test is the very small quantity that is required for examination; it would be well therefore for the operator to perform the experiment in both ways on a separate paper.

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* If any trifling opacity occur in a simple solution of arsenic, when assayed by the nitrate of silver, it may be considered as the effects of some casual impurities; this is further demonstrated by bringing over the surface of the arsenical liquid, a piece of blotting paper, or a stopper, moistened with a solution of ammonia, when there will instantly form a copious yellow precipitate of arsenite of silver. If this experiment be performed on a surface of glass, laid over white paper, the result is very striking and beautiful.

† Annals of Philosophy, vol. x. p. 60.

OBJECTION 2. *The Muriates produce precipitates with silver so copious and flocculent, as to overcome every indication which the presence of arsenic would otherwise afford.* Dr. Marcet proposes to obviate this difficulty, by adding to the fluid to be examined dilute nitric acid, and then cautiously applying the nitrate of silver until the precipitation ceases; in this way the muriatic acid will be entirely removed, whilst the arsenic, if it be present, will remain in solution, and may be rendered evident by the affusion of ammonia, which will instantly produce the yellow precipitate in its characteristic form. This mode, however, it must be confessed, appears complicated, and requires some chemical address for its accomplishment; it should be also known that the yellow precipitate thus produced is not always permanent, for it is soluble in the nitrate of ammonia formed during the process. Under these circumstances, it is surely preferable to precipitate at once from the suspected fluid all the substances which nitrate of silver can affect, and then to expose the mixed and ambiguous precipitate so obtained to a low heat in a glass tube, when the arsenious acid will be immediately separated by sublimation. In this way the presence of muriates may even in certain cases be serviceable, especially if the quantity of arsenic be minute; for by increasing the bulk of the precipitate we shall decrease the difficulty of its examination. By this process, also, I should propose to meet the embarrassments which are stated to arise from the influence of various animal and vegetable substances, as milk, broth, wine, &c. so frequently present in the suspected liquid, and which are known to alter the character of the arsenical indications.

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* London Medical and Physical Journal, January, 1818.

OBJECTION 3. *Chromate of potass produces, with Nitrate of Silver, a yellow precipitate which, when placed side by side with one produced by Arsenious acid, cannot be distinguished by colour or appearance from it.* This fact has lately been announced by Dr. Porter of the University of South Carolina. (Silliman's Journal, iii. 355.) 'But as the presence of Chromate of potass can never be suspected in any research after arsenic, in cases of forensic interest, the fact is of no importance to the physician.

Where the arsenious acid is mixed with vegetable matter, and it becomes difficult to separate it by filtration, the whole may be evaporated to dryness, taking great care that the heat applied for such a purpose never exceeds 250° *Fah:* or we shall lose the arsenic by volatilization. The residue thus obtained may then be submitted to a higher temperature, in a subliming vessel, in order to procure the arsenious acid in its pure state. Should the arsenious acid have, in the first instance, been dissolved in oil, Dr. Ure proposes to boil the solution in distilled water, and to separate the oil afterward by the capillary action of wick threads. If the arsenious acid be mixed with resinous bodies, oil of turpentine may be employed as their solvent, which will leave the arsenic untouched. Dr. Black directed the application of alcohol for this purpose, but this is obviously improper since arsenious acid is soluble in that fluid.

It has been stated that, in consequence of the inability of arsenious acid to decompose nitrate of silver by simple elective attraction, the presence of an alkali becomes indispensable in the examination, for which purpose Dr. Marcet has suggested the superior advantages which will attend the use of ammonia, in cases where the arsenic has not been previously combined with a fixed alkali, since it does not, when added singly, decompose nitrate of silver; a circumstance which in using the fixed alkalies is very liable to occasion fallacy. This led Mr. Hume to improve his original plan, by forming at once a compound, which he calls the *Ammoniaco-nitrate of silver*, but which may with more propriety be designated as an *Ammoniuret.*[*] This is a triumph in the art of analysis; for whilst it obviates the necessity of ascertaining the exact proportion of alkali required in each experiment,[†] it possesses the valuable property of not in the least disturbing the phosphate of soda.

(B) *Sulphate of Copper.* Like the preceding test, this requires also for its success, that the arsenious acid should be combined with some alkali, in which case, by the operation of double elective attraction, an arsenite of copper is thrown down of a very striking and characteristic colour, being that of the well-known pigment called *Scheele's green;* if arsenic be not present in the liquid so assayed, and a fixed alkali has been employed, the result will be a delicate *sky blue*, instead of the *grass green* precipitate.

Mr. Hume avails himself also of the peculiar property of ammonia to form a metallic salt, and has employed it with copper; he takes the sulphate or acetate of that metal, and by the same process as that described for the preparation of an ammoniuret of silver, forms another test. In using this, however, care must be taken that it be not too highly concentrated, for in that state it will not produce precipitation. Much controversy has taken place on the subject of sulphate of copper as a test for arsenic, and it has been stated with more confidence than truth, that a *decoction of onions* has the property of imparting to the copper precipitate, which is produced by a fixed alkali, a colour and appearance analogous to that which is occasioned by arsenic. This opinion was boldly advanced and supported on a most important trial at the Lent assizes for Cornwall in 1817. Since this event an opportunity* has occurred which has enabled me to examine this alleged fact, by a fair and appropriate series of experiments, the result of which satisfactorily proved that the opinion was grounded on an optical fallacy, arising from the *blue* precipitate assuming a *green* colour, in consequence of having been viewed through a yellow medium. † The phosphoric salts may also, under similar circumstances, be mistaken for arsenic, for the intense blue colour of the phosphate of copper will thus necessarily appear green. This instance of optical fallacy is not solitary, for *corrosive sublimate* has been said to possess the character of an alkali, because it turns the syrup of violets green, whereas this change is to be attributed solely to the combination of the yellow hue of the sublimate with the blue colour of the violet.

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[*] The following is the formula for its preparation. Dissolve ten grains of lunar caustic in ten times its weight of distilled water, to this add *guttatim*, liquid ammonia, until a precipitate is formed: continue cautiously to add the ammonia, repeatedly agitating the mixture until the precipitate is nearly redissolved. The object of allowing a small portion to remain undissolved is, to guard against an excess of ammonia. Wherever the test is used, the liquid to which it is added ought to be quite cold.

[†] This is very important, for an excess of ammonia redissolves the yellow precipitate, and therefore defeats the object of the test. The fixed alkalies, in excess, have not such a property.

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* The great impression made upon the public mind in Cornwall by the above trial, produced a disposition to regard the cause of every sudden death with more than usual jealousy.

In consequence of a report having arisen that a young woman had died after an illness of forty-eight hours, and been hastily buried at Madron, the magistrates of that district issued their warrant for the disinterment of the body, and requested my attendance at the examination. It appeared upon dissection that the immediate cause of death had been inflammation of the intestines; the stomach was found to contain a considerable portion of liquid, which was carefully collected and examined; no solid matter could be discovered in it. It appeared to consist principally of the remains of a quantity of penny-royal tea, which had been the last thing administered to the deceased. This was divided into several portions, and placed in separate wine glasses, and submitted, in the presence of the sheriff and other gentlemen, to a series of experiments, among which the following may be particularized, as bearing upon the question at issue.

1st. A few drops of a solution of sub-carbonate of potass were added to the liquid, in one of the glasses, when its colour, which was before of a light hazel, was instantly deepened into a reddish yellow; the sulphate of copper was then applied, when a precipitate fell down, which every one present immediately pronounced to be of a *vivid green* hue, but on pouring off the supernatant liquid, and transferring the precipitate on white paper, it assumed a blue colour, without the least tinge of green; the explanation of the phenomenon, and the fallacy to which it gave rise, was obvious; the yellow colour, imparted to the liquid by the alkali, was the effect of that body upon vegetable extract, and will generally take place on adding it to the infusions of vegetable substances.

2d. To another portion of the liquid, the ammoniaco-nitrate of silver was added; a slight turbidness arose, but no yellow precipitate occurred.

3d. After adding a fixed alkali, the surface of the liquid was touched with a stick of lunar caustic, but no yellow precipitate was produced.

4th. The liquid was next assayed in a watch-glass, for a *phosphate of soda*, by endeavouring to form a triple salt with magnesia and ammonia, as suggested by Dr. Wollaston; the result proved that *phosphate of soda* was not present. It is unnecessary to pursue the relation of the experiments; I conceive that sufficient evidence has been adduced to establish the truth of the explanation. I have frequently repeated the first experiment, substituting for the gastric infusion a decoction of onions, and with similar results.

† This explanation applies equally to the objection lately advanced by Dr. Porter, of the University of South Carolina, who in observing on the tests for arsenic, remarks, that an appearance similar to *Scheele's Green*, is produced by the carbonate of potass when added to a solution of copper containing coffee, but without arsenic, more striking than if a weak solution of arsenic be used. *Silliman's Journal*, iii. 365.

Whenever therefore such a source of fallacy can be suspected, the operator would do well to repeat his experiment on white paper, in the manner I have before proposed, and the results which are obtained in glasses should always be examined by daylight, and viewed by reflected, and not by transmitted light.

(C.) *Sulphuretted Hydrogen.* This is a very delicate test for arsenic, producing with its solution a beautiful golden coloured liquor, which after a short time lets fall a precipitate. Mr. Phillips,* in reviewing the third edition of the present work, has stated that no such precipitate occurs, but I find that in close, as well as in vessels exposed to the air, it takes place by repose. By this reagent, so small a quantity as $\frac{1}{100,000}$ may be detected in solution.

(D) *Alkaline Hydro-sulphurets.* These bodies do not affect the arsenious solution, unless a few drops of nitric or muriatic acid be added.

There are several other tests by which arsenic may be identified. The process described in the Dublin Pharmacopœia, for the preparation of *Arsenias Kali*, the arsenite, or rather super-arseniate of potass, which has been long known under the name of "the arsenical salt of Macquer," has been strongly advised as a collateral proof; it consists in decomposing the nitrate of potass† by the arsenious acid, but since this problem requires that the suspected poison should be in a solid and palpable form, it is impossible to examine its pretensions to our confidence, without being reminded of the story so often told us in our infancy, of catching a bird by laying salt upon its tail.

It is necessary to observe in this place, that the *arseniate*, like the *arsenite of potass*, or that of *ammonia*, is obedient to the silver test, but that instead of the yellow precipitate, which is produced by the latter salt, we obtain, by the former, a red or brick-coloured one.

If arsenious acid and quick-lime be heated together in a glass tube, a sudden ignition is occasioned at a certain temperature, when metallic arsenic will sublime, and an arseniate of lime be formed. In this case one portion of the arsenious acid is robbed of its oxygen to complete the acidification of the rest.

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* Annals of Philosophy, *New Series*, No. III. for March, 1821.

† The habitudes of arsenious acid with the nitrates were first observed by Kunkel; nitrous vapour is disengaged, part of the oxygen being absorbed by the arsenious acid, by which an arsenite of potass is formed

In taking an impartial review of all the evidence which the investigation of this subject can furnish, it must appear to the most fastidious, that the silver and copper tests above described are capable, under proper management, of furnishing striking and infallible indications, and that in most cases they will be equally conclusive, and in some even more satisfactory in their results, than the metallic reproduction upon which such stress has been laid, and for this obvious reason, that unless the quantity of metal be considerable, its metallic splendour and appearance is often very ambiguous and questionable. It has to my knowledge happened to a medical person, by no means deficient in chemical address, to ascribe to the presence of arsenic that which was no other than a film of very finely divided charcoal: in this state of doubt the last resource was to ascertain whether it yielded, or not, upon being heated, an alliaceous odour. Surely an unprejudiced judge would prefer the evidence of sight, as furnished by the arsenical tests, to that of smell, as afforded in the last experiment. No one will attempt to deny that it is the duty of the medical practitioner who is called upon to decide so important a question as the presence of arsenic, to prosecute by experiment every point which admits the least doubt; he should also remember that in a criminal case, he has not only to satisfy his own conscience, but that he is bound, as far as he is able, to convince the public mind of the accuracy and truth of his researches; and he fails in his duty if he omits, through any false principle of humanity, to express the strong conviction which the success of his experiments must necessarily have produced in his mind. Let it however be remembered, that the application of chemical reagents on solutions suspected to contain arsenic, throws no obstacle whatever in the way of the metallic reduction of that body, but on the contrary, it furnishes preparatory steps in the process, since the precipitates which are thus produced may be collected, and easily decomposed, as before stated. Those who for judicial purposes may require farther information upon these subjects are referred to the second volume of our work on "*Medical Jurisprudence.*" *Tit: Poisons.*

ARSENICI OXYDUM SUBLIMATUM. L.

Prepared Oxide of Arsenic.

The object of this process is to ensure a pure and uniform oxide; it has been already stated that a more dangerous fraud can scarcely be committed than the adulteration of arsenic; we are therefore not inclined to coincide with Mr. Thomson, and to regard "the present process as superfluous."

ASARI FOLIA L.E.D. *Asarum Europæum.*
Asarabacca Leaves.

Qualities. The leaves, when recent, are nauseous, bitter, and acrimonious, and prove violently purgative and emetic, properties which are impaired by keeping. **Chemical Composition**, a peculiar acrid principle, not well understood. **Solubility**, water by infusion extracts their sensible properties, but they are lost by decoction. **Uses.** As an errhine; Dr. Cullen has remarked that they form the most useful species of this genus of local stimulants. **Dose**, gr. iij to v. repeated every night until the full effect is produced. **Officinal Prep.** *Pulvis Asari compositus.* E.D.

[ASARUM CANADENSE. *W.* II. 838. *Bw.* I. 49. *Bn.* II. 85. *Radix.*
Canada Snakeroot. Wild ginger. The root.

Specific Character. Leaves broad, kidney form, in pairs; calyx woolly, deeply three parted, divisions sublanceolate reflected. *Root*, long, creeping, horizontal; *Colour*, lightish yellow; flowers in April and May. Grows from Canada to Carolina. **Sensible Properties.** *Taste* warm and aromatic. **Chemical Composition.** Volatile oil, resin, fæcula, and mucus. (*Bigelow.*) **Solubility.** Alcohol and water extract its **Medical Properties.** It is an aromatic more active than serpentaria, and less so than ginger, but somewhat allied to both. It may be advantageously combined with tonics. It is sudorific in large doses, also a stimulating expectorant. **Doses**, ʒss of the powder, or ℥ij of the infusion prepared by pouring ℥xii of boiling water upon ℥ss of the root.—I.]

ASCLEPIAS. *Pentandria. Digynia. Linn.*
Milk-weed. Silk-weed.

Eaton enumerates fifteen species of asclepias in his manual, three of which are introduced into the secondary list of medicines in the American Pharmacopœia. These are not all that have been used medicinally, but with the exception of the tu-

berosa, the properties of none of them have been very accurately investigated.

ASCLEPIAS INCARNATA. *Flesh-coloured Asclepias.* *The root.*

ASCLEPIAS SYRIACA. *Radix.* *W.* I. 1265. *Common Silk-weed. Milk-weed. The root.*

Specific Character. Stem very simple: leaves lanceolate oblong, gradually acute, downy beneath: umbels subnodding, downy. Three to five feet high; flowers in large close clusters, sweet-scented—nectaries are fly-traps. The milk weed is a perennial plant found in great abundance by the sides of roads and fences. It rises to the height of four or five feet. Its flowers are blue, succeeded by rough pods filled with seeds and down. Medical Use. There is much diversity of opinion as to the medicinal character of this article. Some have represented it to be inert, others a mild sudorific and expectorant, others that it possessed all the virtues and activity of colchicum, and a fourth class has denounced it as a hydrogogue too powerful to be introduced into the Materia Medica with safety. An itinerant empyric came to this city a few years ago with an article, which was afterward demonstrated to be the root of this species of milk-weed, and which he was permitted to administer to a considerable extent, in a public institution for the cure of dropsy. The mode and result of his practice were obligingly furnished me by Andrew Hamersley, M.D. late resident physician to the New-York State Prison Hospital. These interesting facts, together with the Doctor's remarks, will be found in the subjoined note.*—I.

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* The Asclepias Syriaca was used in the Hospital of the New-York State Prison during the spring and summer of 1820. The formula employed and its mode of exhibition were as follows: ℞. Rad. Asclep. Syriac, ℔ j. Aq. puræ oxij. ℳ. coque ad ovj dem. adde Spt. Junip. oij. cola. sumat æger. pro dos. f℥ij. omni vel secund. quaq. hor. pro re nata.

I have selected the following cases, in which it was given, from a record taken at the time, to show its effects in the treatment of dropsy.

In the first case, the patient had, at the time of commencing the remedy, an extremely tumefied abdomen, had during five months preceding used various diuretic medicines, without deriving from them any permanent benefit. During the first twenty-four hours after the exhibition of the decoction, voided nearly two gallons of urine; in rather more than a month, all dropsical symptoms disappeared, convalescent about two months, dropsical symptoms returned, was again cured by a long course of ordinary diuretics.

In the second case, the patient, during its exhibition, voided on an average half a gallon of urine every night while the prisoners were confined to their rooms; being discontinued for a few days, the discharge of urine diminished, while the size of the abdomen increased; improvement manifest on its re-

ASCLEPIAS TUBEROSA. *W.* I. 1268. *Bw.* II. 59. *Bn.* I. 239. *Radix.*

Butterfly weed. Pleurisy root. Swallow wort. The root.

Specific Character. Stem somewhat erect, at the top spreading, branched, very rough-haired: leaves scattered

newal; relapse occurred as in the preceding case in about two months after the cessation of the remedy; relief then obtained by the use of Sup. Tart. Potass, Diuret. decoc. The 3d and 4th cases present us with results equally favourable, terminating in the recovery of the patient, although the latter shortly afterward showed symptoms of relapse. The fifth case presents us with results exactly like those of the first and second. The sixth patient was improving under common prescription when the Asclepias was administered; his recovery was however very much hastened by its use, and was followed by no relapse; the medicine occasioned some nausea, and this is the only instance noticed of its affecting any other than the urinary organs. The seventh case similar to the preceding, attended with favourable results. The eighth case deserves particular notice, as evincing the strong diuretic power of the medicine, and the necessity of prescribing it in such doses as to suit the existing circumstances of the patient; this man laboured under Ascites combined with Anasarca, had been previously mercurialized, was in a state of extremely debility, had lately taken diuretic and tonic remedies; the decoction of Asclepias was administered in the usual manner, the result was the evacuation of two gallons of urine in the first twenty-four hours, immediate and excessive prostration of strength, and the very evident acceleration of dissolution. The ninth and last case deserves especial consideration. It was a case of Ascites connected with pulmonary affection; the patient had previously been mercurialized by means of calomel and squill pill, but without any decisive advantage; he after this took the Asclepias as per recipe, omitting the gin, and continued it one week without benefit; he was then directed to take ℥j. of the decoction daily per se. which plan was pursued for two weeks farther, without producing sensible effects; he then commenced the use of Asclepias with the gin, which was followed by considerable diuretic effect. In a week, however, from this time, his dropsical symptoms returned, and was finally much relieved by a combination of ordinary diuretics and cathartics.

Other instances of like failure of this medicine uncombined with gin are evidenced by our notes. This would appear as if less were to be attributed to the virtues of the herb, than to the universally known diuretic properties of the gin; the frequent recurrence of relapse is another circumstance which might very reasonably tend to disprove the radical virtues of the plant. It is, however, worthy of remark, that there are causes of a peculiar character in continual force in that institution, sufficient to reproduce all the varied forms of dropsy, even where the most skilful means had been employed to relieve a primary attack; but I am of opinion that such relapses were more frequent and more speedy in their occurrence, after the use of the Asclepias, than after a judicious administration of the general curative remedies. How then shall we most readily account for the surprising effects of the medicine given according to the precise formula? Was the plant inert, and were all the good effects derived from its union with gin? Or would an equal amount of gin per se, have been as efficacious as when united with the Asclepias? As these cases of Ascites were mostly of the asthenic character, might not the use of this article, both stimulant and diuretic, have produced results superior to those of common medicinal efficacy? Or were the curative properties of the plant such as could only be extracted by some other solvent oblong lanceolate, rough-haired: umbels terminal, sub-corymbed. A variety, the *decumbens*, has a decumbent stem; leaves, sublinear hirsute. It grows most abundantly in the southern states, but may be found scattered over sandy soils from Maine to Georgia. It seldom rises higher than about two feet. In June and July it has a beautiful orange-coloured flower, which is succeeded by long slender pods.

Sensible Qualities. The root of this plant, which is perennial, is large; *colour*, brown on the surface, white and striated within: *taste*, bitter, though not unpleasant. Chemical Properties. "Its soluble portions are chiefly extractive matter and fæcula." (*Bigelow*.) Solubility. Its virtue is extracted by water. Medicinal Use. It obtained the name of *Pleurisy root* from the belief that it operated specifically on the lungs; and although that popular opinion may have led, in some instances, to the injudicious use of it in the early stage of pleuritis, experience will in some measure justify its claim to that appellation, when administered in the secondary stage of pneumonic inflammation. I have used it sufficiently in such cases to speak with some confidence of its efficacy in promoting bronchial secretion and expectoration. Its operation is also frequently extended to the skin, increasing perspiration without exciting fever. When given in large doses it operates as an emetic, but its action in this case is mild and free from danger. The operation of the Pleurisy root is in some respects allied to that of the Blood root, but it is more mild, less certain, and less useful.

Medicinal Preparations. It may be given in powder in doses of ℈j. to ʒss. or in decoction prepared by boiling ℥ss of the bruised root in oj. of water. This, in doses of ℥j, may be given every two hours as an expectorant and sudorific, and increased in quantity should it not produce these effects, till it sickens the stomach.—I.]

ASSAFŒTIDA.* L.E.D.

Ferula Assafœtida. *Gummi Resina.*

Qualities. *Form*, small irregular masses, adhering together, of a variegated texture, and containing many little

than water? These queries naturally present themselves on the review of the foregoing facts. Under all these circumstances then, would not an infusion or tincture with gin be the best mode of administration, which might be the readiest way of testing the real merit of the plant, being given in much smaller dose than by the present formula, and making less liability of deception from the amount now prescribed.

* Assafœtida was used by the ancients as a condiment, under the name o

shining tears of a whitish, reddish, or violent hue. *Taste*, bitter and sub-acrid. *Odour*, fœtid and alliaceous, but this latter property is very much impaired by age. Chemical Composition. Gum (or according to Brugnatelli, *extractive*) 60, resin 30, and essential oil 10 parts. Solubility. It yields all its virtues to alcohol and ether; if triturated with water it forms a milky mixture, but which is not permanent, unless some intermede be employed for the suspension of the gum-resin; for this purpose egg may be added, in the proportion of one yolk to a drachm of assafœtida, or a permanent mixture may be effected by carefully triturating the gum resin with double its weight of mucilage. If ℥vj of assafœtida be triturated with ʒss of camphor, a mass results of a proper consistence for a plaster; if triturated with carbonate of ammonia, it is easily reduced to powder, but undergoes no other change. Forms of Exhibition: in mixture or in pills. The Indian physicians have an idea that on account of its stimulating powers, it will, if administered to a pregnant woman, produce abortion. Dose, gr. v. to ℈j. *Form.* 23, 29. Med. Uses, stimulant, antispasmodic, expectorant, and anthelmintic; in coughs, attended with pulmonary weakness, and a tendency to spasm, it is very beneficial; in cases of flatulent cholic, it has, in the form of enema, acted like a charm. Officinal Prep. *Mist: Assafœtid:* L.D. *Tinct: Assafœtid:* L.E.D. *Spir: Ammoniæ fœtid:* (𝕭) L.E.D. *Tinct: Castorei comp:* (𝕭) E. *Pil: Aloes cum Assafœtid:* (𝕲) E. *Pil: Galbani: comp:* (𝕭) L. *Enema Fœtid:* D. Impurities. Its characteristic odour should be powerful, and when broken, its fracture ought to exhibit a bluish-red appearance. It ought not to be brittle.

BALSAMUM PERUVIANUM. L.E.D.

(Myroxylon Peruiferum.) *Peruvian Balsam.*

Qualities. *Form*, a viscid liquid of a reddish brown colour. *Odour*, fragrant and aromatic. *Taste*, hot and bitter. Chemical Composition. Resin, volatile oil, and benzoic acid; it is therefore a true *balsam*: this term was formerly applied to every vegetable resin having a strong scent and the fluidity of treacle, and which was supposed to possess many

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[illegible] *Laserpitium*, (Pliny;) and according to Kempfer, the Persians use it [illegible] same purpose. The Arabian writers on the materia medica class this [illegible] among their *Mobehyat*, (*Aphrodisiaca.*) The term *Assafædita* is derived from the monks of the Salernian school; some of the writers of the middle ages call it *Opium Cyrenaicum*, i. e. the Juice from Cyrene.

medicinal virtues; it is now restricted to those resins which contain the benzoic acid in their composition, of which there are only three, viz. the Balsams of *Peru*, *Tolu*, and *Benzoin*. Solubility. Water when boiled upon it dissolves only a portion of benzoic acid; ether is its most complete solvent; alcohol dissolves it completely, but the quantity of this menstruum must be considerable. Properties, stimulant, and tonic, on which account in certain chronic affections of the lungs, it has been found a serviceable expectorant; Sydenham gave it in Phthisis, but wherever any inflammatory action is to be apprehended Dr. Fothergill wisely cautions us against its use. Forms of Exhibition. Diffused in water by means of mucilage, or made into pills with any vegetable powder. Dose, gr. v to ʒj. Adulterations. A mixture of resin and some volatile oil with benzoin, is often sold for Peruvian Balsam, and the fraud is not easily detected, and is probably of but little importance.

BALSAMUM TOLUTANUM. L.E.D.
(Toluifera Balsamum.) *Balsam of Tolu.*

Qualities. *Form*, a thick tenacious liquid becoming concrete by age, in which state it is usually found in the shops. *Taste*, warm and sweetish. *Odour*, extremely fragrant, resembling that of lemons. Chemical Composition. Volatile oil, resin, and benzoic acid. Solubility. It is soluble in alcohol, forming a tincture which is rendered milky by water, but no precipitate falls. When dissolved in the smallest quantity of a solution of potass, its odour is changed into one that resembles clove pink. Med: Uses. It has been regarded as expectorant. In turning to our classification of expectorants, vol. 1, p. 120, it will be found to occupy a place in the second division of our first class, for it may be considered as capable of stimulating the pulmonary exhalants, whence its use in chronic coughs. Forms of Exhibition. It may be suspended in water by means of mucilage, or yolk of egg, but it is rarely employed except on account of its agreeable flavour;* its virtues are similar to those of the balsam of Peru. Officinal Prep. *Tinct: Benzoin. comp:* L.E.D. *Tinct: Toluiferi Balsam:* E.D. *Syrup: Tolut:* L.

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* Tolu Lozenges. Sugar 8 oz. Cream of Tartar 1 oz. Starch 2 drachms. Tinct. Toluiferæ Balsami E. one fluid drachm, mucilage of Gum Tragacanth q. s.

BELLADONNÆ* FOLIA. L.E.D.

(Atropa Belladonna.) *Deadly Nightshade.*

QUALITIES. The leaves are inodorous. *Taste,* slightly nauseous, sweetish, and subacrid; their peculiar properties are not lost by drying. CHEMICAL COMPOSITION. Vauquelin found that the leaves contained a substance analogous to albumen, salts with a base of potass, and a bitter principle on which its narcotic properties depended, and more lately the presence of an alkaline element has been detected, which has received the appellation of *Atropia,* the sulphate of which crystallizes very beautifully. SOLUBILITY. Water is the most powerful solvent of its active matter. USES. It is a powerful sedative and narcotic, both as an internal medicine, and as an external application; in this latter form, it alleviates local pains very effectually, but is liable to affect the nervous system. The recent leaves powdered, and made into an ointment with an equal weight of lard, will be found an efficient form for many purposes; rubbed over the penis it prevents priapism and relieves chordee more effectually than any application which has been proposed. FORMS OF EXHIBITION. Every part of the plant is poisonous, and the berries from their beautiful appearance have often tempted the unwary; the leaves however furnish the most convenient and powerful form of exhibition; externally, they may be used as a poultice, internally, one grain of the dry leaves powdered, and gradually increased to 10 or 12 grains, or the leaves may be infused in boiling water in the proportion of four grains to two fluid-ounces, which may be given as a dose. A little of this infusion dropped into the eye permanently dilates the pupil, for which intention it has been successfully applied previous to an operation for the cataract. The extract of this plant, since its active principle is fixed, ought to possess activity, but as it occurs in commerce it is found to be very uncertain and variable, a circumstance which entirely depends upon the manner in which it has been prepared.† See *Extractum Belladonnæ.*

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* *Belladonna,* so called from the juice of its berries being used as a cosmetic by the Italian women, to make their faces pale.

† The root of this plant seems to partake of the same qualities as the leaves, but is perhaps less virulent.

> "Or have we eaten of the *insane root,*
> That takes the reason prisoner?"
> *Macbeth.*

The Belladonna is supposed by Sauvage to be the plant that produced such extraordinary effects upon the Roman soldiers during their retreat, under the

An overdose of belladonna produces the most distressing and alarming symptoms, and so paralyzing is its influence, that vomiting can be hardly excited by the strongest doses of tartarized antimony; in such cases, vinegar will be found the best antidote, or the affusion of cold water over the surface of the body, after the application of which, emetics are more likely to perform their duty, for physiological reasons explained in vol. i. p. 114. **Officinal Prep.** *Extract: Belladonnæ* L. *Succus spissatus Atropæ Belladonnæ.* E.

BENZOINUM. L.E. Benzoe. D. (Styrax Benzoin) vulgo, *Benjamin.*

Qualities. *Form*, brittle masses, composed of white and brownish, or yellowish fragments; *Odour*, fragrant; *Taste*, scarcely perceptible. When heated, it exhales benzoic acid in the form of crystals. **Chemical Composition.** Resin, and a large proportion of benzoic acid. **Solubility.** It is readily dissolved by alcohol and ether, and is again separated from them by water; solutions of lime, and the fixed alkalies separate the benzoic acid from it, which can afterward be recovered from such solutions by the addition of an acid. **Uses.** It is considered expectorant, and was formerly used in asthma. and other pulmonary affections; it has however fallen into disuse, and is now principally employed in perfumery, and odoriferous fumigations.* **Officinal Prep.** *Acidum Benzoicum.* L.E.D. *Tinct: Benzoini comp:*† L.E.D. **Impuri-**

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command of Antony, from the Parthians, when they are said to have "suffered great distress for want of provisions, and were urged to eat unknown plants; among others they met with an herb that was mortal: he that had eaten of it lost his memory and his senses, and employed himself wholly in turning about all the stones he could find, and after vomiting up bile, fell down dead." (*Plutarch's Life of Antony.*) The Scotch historian Buchanan relates, "that the Scots mixed a quantity of the juice of the Belladonna (*Solanum Somniferum*) with the bread and drink which by their truce they were to supply the Danes with, which so intoxicated them that the Scots killed the greatest part of Sweno's army.

* **Fumigating Pastilles.** *Benzoin* generally constitutes the chief ingredient in these compositions, to which may be added any variety of odoriferous substances; the following formula may be offered as a specimen: ℞. *Benzoin* ʒj, *Cascarillæ* ʒss, *Myrrh* ℈j, *Olei nuc. moschat. ol. Caryophyll.* āā *gr.* x. *potassæ nitratis* ʒss, *carb. ligni* ʒvj, *mucilag. gum. Trag.* q. s.

† **Virgin's Milk.** A spirituous solution of Benzoin mixed with about twenty parts of *rose water*, forms a cosmetic long known by this name.—Under the same title also a very different preparation is sold, *vid. Liquor Plumbi sub-acetatis.*

Friar's Balsam, Wade's Drops, Jesuite's Drops.—These preparations are nothing more than the *Tinctura Benzoini composita.*

Pectoral Balsam of Honey.—Is the tincture of *Benzoin* or that of *Tolu.*

TIES. It is found in the market in various degrees of purity, the best is yellowish, studded with white spots; the worst is full of dross, and very dark or black.

BISTORTÆ RADIX. L.E.D.

(Polygonum Bistorta.) *Bistort Root.*

Qualities. This root has no odour, but is highly astringent. Chemical Composition. Its active principles are tannin and gallic acid. Med. Uses. It acts as an astringent, and is accordingly used in hemorrhages and fluxes. Dose of the root ℈j—ʒj; of a decoction f℥j—f℥ij. Combined with *Calamus* it has been successfully administered for the cure of Intermittent fevers. *See Vol.* 1, p. 202.

CALAMI RADIX. L. Acori Calami Radix. E.

Acorus. D. (Acorus Calamus) *Sweet Flag Root.*

Qualities. This root is full of joints, crooked, and flattened on the sides, internally of a white colour, and loose spongy texture. *Odour*, fragrant and aromatic. *Taste*, bitter and pungent, qualities which are improved by exsiccation. Chemical Composition. The principles in which its qualities reside appear to be essential oil, and bitter extractive; the root likewise contains fecula, which is copiously precipitated from its infusion by sub-acetate and acetate of lead. Watery infusion extracts all its virtues, but decoction impairs them. Spirit is also an appropriate solvent, and a resinous extract may be produced accordingly. Uses. It is not employed so frequently as it deserves; it would be a useful addition to many of the compound infusions of vegetable stomachics. Dose. A cupfull of the infusion made by adding ʒvj of the dried root to f℥xij of boiling water. It is so favourite a remedy with the native practitioners of India, in the bowel complaints of children, that there is a penalty incurred by any druggist who will not, in the middle of the night, open his door, and sell it if demanded.

Essence of Coltsfoot.—This preparation consists of equal parts of the *Balsam of Tolu*, and the *Compound Tincture of Benzoin*, to which is added double the quantity of *rectified Spirit of Wine*; and this forsooth is a *Pectoral for Coughs!* If a patient with a pulmonary affection should recover during the use of such a remedy, I should certainly designate it as a lucky Escape, rather than as a skilful Cure.

CALUMBÆ RADIX. L. (*Plantæ adhuc Anonymæ*)
Colomba, Radix. E.D. *Calumba Root.*

Qualities. *Form*, the dried root imported into this country is in transverse sections; the bark is thick, and easily detached; the wood is spongy and yellowish; the pieces are frequently perforated, evidently by worms. *Odour*, slightly aromatic. *Taste*, bitter, and somewhat acrid. Chemical Composition. Cinchonia, bitter resin, volatile oil, and starch, in addition to which M. Planche has found a peculiar animal-like substance. Solubility. Boiling water takes up about one-third of its weight, but proof spirit appears to be its most perfect menstruum. Incompatible Substances. No change is occasioned in the infusion by the solutions of nitrate of silver, sulphate of iron, muriate of mercury, or tartarized antimony; but precipitates are produced by the *infusion of galls and yellow Cinchona bark*, by *subacetate and acetate of lead*, *oxymuriate of mercury*, and *lime water*. The infusion very soon spoils. Dose of the powdered root gr. xv to ʒ ss; of the infusion f℥ iss to f℥ ij. Uses. It is one of the most valuable tonics and stomachics which we possess. It seems to be superior to many others, from not possessing astringent, and stimulant powers, on which account it is singularly eligible in certain pulmonary and mesenteric affections; it may be given in combination with chalybeates, aromatics, saline purgatives, or with rhubarb, as circumstances may require. (*Form.* 34, 155.) Officinal Preparations. *Infus. Calumbæ.* L. *Tinct. Calumbæ.* L.E.D. It becomes worm-eaten by age, and in that condition, should be rejected. Those pieces which have the brightest colour, and the greatest specific gravity, are the best. The root of *white briony*, tinged yellow with the tincture of Calumba, has been fraudulently substituted for this root.

CAMBOGIA. L. (*Stalagmitis* *Cambogioides.*) Gambogia, E.D.
Gamboge.

Qualities. *Form*, lumps of a solid consistence, breaking with a vitreous fracture; *Odour* none; *Colour*, deep yellow, bordering on red, and becoming, when moistened, a brilliant light yellow. *Sp. Grav.* 1·221. *Taste* slightly acrid, but which is not experienced unless it be allowed to remain long in the mouth. Chemical Composition. One part of gum, (*Cerasin*,) and four parts of a [illegible] resin; but this knowledge throws no light on the nature of its cathartic property. Solu-

BILITY. When triturated with water two-thirds of its substance are speedily dissolved, and a turbid solution results; alcohol dissolves nine-tenths, and forms a yellow transparent tincture, which is rendered turbid by the addition of water; sulphuric ether dissolves six-tenths of the substance; it is also soluble in alkaline solutions, and the resulting compound is not rendered turbid by water, but is instantly decomposed by acids, and the precipitate so produced is of an extremely brilliant yellow colour, and soluble in an excess of acid. INCOMPATIBLE SUBSTANCES. No bodies appear to produce in gamboge such a chemical change as to destroy the chemical properties which distinguish it, but by a mechanical admixture, its solubility, and consequently its operation, may be materially modified. Dr. Cullen found that the inconvenience arising from its too rapid solubility, and sudden impression upon the stomach, might be obviated by diminishing the dose, and repeating it at short intervals as directed in *Form.* 89. FORMS OF EXHIBITION. No form is more judicious than that of pill. Its alkaline solution has been sometimes exhibited in dropsy, when it is said to operate both on the bowels and kidneys. DOSE, gr. 2 to gr. 6. USES. It is a powerful drastic cathartic, and hydragogue, very liable to excite vomiting, and from this peculiar action upon the stomach it has been frequently employed with success in the expulsion of teniæ (*Form.* 161.) and it accordingly enters as an ingredient into many of the empirical compositions which are sold for the cure of tape worms.[*] OFF. PREP. *Pil. Cambogiæ comp.* L. There is a considerable difference in the degree of purity in which this substance occurs in the market; it should be estimated by its clearness and brilliancy.

CAMPHORA. L.E.D. (*Laurus Camphora.*[†])

Camphor.

QUALITIES. *Form*, a white brittle substance, unctuous to the touch, but possessing at the same time a degree of ductility which prevents its being easily pulverised, unless a few drops of spirit be previously added. It is capable of affecting a crystalline form.* *Odour*, peculiar, fragrant, and penetrating. *Taste*, bitter, pungent, and aromatic. *Specific gravity* ·9887, it therefore swims on water; it is so volatile that during warm weather, a considerable proportion will evaporate, especially if at the same time the atmosphere be rather moist, for the reason stated in volume first. It is readily ignited, and burns with a brilliant flame, and much smoke; it melts at 288°, and boils at 400°. CHEMICAL COMPOSITION. It is a proximate vegetable principle, resembling the essential oils in many of its habitudes, and probably differs from them in composition only in containing a larger proportion of carbon. SOLUBILITY; water may be said to dissolve about a nine-hundredth part of its weight, or fʒ j rather more than gr. ½, but its solvent power is considerably increased by the addition of carbonic acid gas; camphor is also rendered more soluble by trituration with magnesia; it is soluble in an equal weight of alcohol, but it is again separated by the addition of water; it is also dissolved by oils, both fixed and volatile,† especially if their temperature be a little raised, and by sulphuric and other ethers, but strong acetic acid may be said to be its most powerful solvent. By repeatedly distilling it with nitric acid, it is converted into *Camphoric acid*, an acid distinguished by peculiar properties, and composing, with alkalies and earths, a class of salts called *Camphorates*, but which do not possess any medicinal value. The alkalies do not produce any effect upon camphor. INCOMPATIBLE SUBSTANCES. It is not affected by any substance with which we can combine it. FORMS OF EXHIBITION. It is preferable in the form of mixture, since it is very liable in the

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[*] THE SPECIFIC OF HERRENSCHWAND, which formerly excited so much interest in Germany, consisted of 10 grains of *Camboge* with 20 of *Sub-carbonate of Potass;* although it is said, that on its being analyzed by order of Elizabeth of Russia, there were also found in it both Mercury and Arsenic.

Camboge is also the basis of the SPECIFIC OF CLOSSIUS.

GOLDEN SPIRIT OF SCURVY GRASS. This is merely a solution of *Camboge* in the *Spir: Armoraciæ comp:*

[†] Although the Camphor of commerce is generally furnished by the *Laurus Camphora*, yet it is abundantly yielded by many other plants. It is said that what is imported from Sumatra is the product of the *Dryobobans Camphora.* It is also contained in the roots of the *Cinnamon*, *Cassia*, and *Sassafras laurels*, and in those of *Galangale*, *Zedoary*, and *Ginger;* in *Cardamom seeds* and *Long*

Pepper. The essential oils of *Lavender*, *Sage*, *Thyme*, *Peppermint*, *Rosemary*, and those of many other labiate plants, yield camphor by distillation. Camphor may be also artificially formed by driving a stream of muriatic acid gas through oil of turpentine; this factitious product, however, is to be distinguished from native camphor in not being soluble in weak nitric acid, and also in not being precipitated by water from its solution in strong nitric acid.

* The collection of the Materia Medica at the College of Physicians contains a beautiful specimen of native Camphor, in the wood; having selected from it as perfect a crystal as I could find, I requested my friend and publisher, Mr. W. Phillips, well known for his researches in crystallography, to undertake its examination; and he observes that "The crystal of native Camphor (in the wood) appears as a flat octohedron; but the primary form is a *right rhombic prism* of 51°. 36′. and 128°. 24′. by measurement with the reflective goniometer on cleavage planes: the octohedral appearance arises from the deep replacement of four of the solid angles of the prism, by as many planes."

† AN ODONTALGIC REMEDY in great repute consists of a solution of camphor in oil of turpentine; a fluid ounce of which will dissolve two drachms.

solid state to excite nausea, and from swimming on the contents of the stomach, to occasion pain at its upper orifice. If a larger dose be required than that which water can dissolve, an additional proportion may be suspended by means of sugar, almonds, yelk of egg, or mucilage, for which purpose three times its weight of gum arabic is required. If Camphor be first dissolved by trituration in a very small portion of oil, it readily mixes with mucilage of gum arabic, and may then be conveniently blended with liquids. It has also the property of uniting with gum-resins, and of converting them into permanently soft, and uniform masses; hence they may sometimes be conveniently applied for diffusing it in water. It may be formed into pill masses by stiff mucilage, fœtid gums, or by a confection. Medicinal Use. In moderate doses it exhilarates, without raising the pulse, and gives a tendency to diaphoresis; and under certain conditions of the body, when opium fails, it promotes sleep. As its effects are transient, its dose should be repeated at short intervals. *Illustrative Formulæ* 1, 6, 21, 125, 134, 164. Camphor is said to correct the bad effects of opium, mezereon, lyttæ, and the drastic purgatives, and diuretics. Dose, gr. ij to ℈j. In excessive doses it occasions anxiety, vomiting, syncope, and delirium; these violent effects are best counteracted by opium. Off: Preparations. *Mistura Camphoræ*. L.D. *Emulsia Camphorata*. E. *Spiritus Camphoræ*. L.E.D. *Tinctura Camphoræ comp*: L.E.D. *Acidum Acetosum Camphoratum*. E.D. *Linimentum Camphoræ*. L.E.D. *Liniment Camphoræ comp*: L. *Liniment*: *Saponis*. (𝕲) L.E.D. Adulterations. It has been stated that pure camphor may be known by placing it upon hot bread, when it will turn moist, whereas an adulterated specimen becomes dry—but with what can it be adulterated? An artificial camphor may be prepared by passing a current of muriatic acid gas through oil of turpentine; the compound is crystalline in its texture, and has the odour of camphor, but is to be easily distinguished from it, and appears to be wholly insoluble in acetic acid.

CANELLÆ CORTEX. L.E.D. (*Canella Alba Cortex.*)
Canella Bark.

Wild Cinnamon.

Qualities. *Form*, it occurs in quilled and flat pieces; the former are of a whitish yellow colour, considerably thicker than cinnamon; the latter, which are probably the bark of the larger branches, or of the stem of the tree, are yellow on the outside, and pale brown within. *Odour*, resembling that of cloves. *Taste*, warm, pungent, and slightly bitter. CHEMICAL COMPOSITION. Its virtues depend upon an essential oil, and a bitter resin. SOLUBILITY. Water extracts only the bitterness, but proof spirit both the bitterness and aroma. MEDICAL USES. As a warm stimulant to the stomach, and as a corrigent to other medicines. In America it is considered as a powerful antiscorbutic. DOSE of the powdered bark gr. x to ʒss. OFFICINAL PREP. *Tinc. Gentian. comp.* (𝕭. 𝕰.) E. *Vinum Aloes*, (𝕰) L.D. *Pulv. Aloes cum canella*, (𝕰) D.

CANTHARIDES. (Cantharis Vesicatoria.)

Blistering, or Spanish Flies.

Although the London College, for reasons sufficiently weighty, were induced on a former occasion to transfer the Blistering fly from the genus *Cantharis* to that of *Lytta*; the present committee for revising the pharmacopœia have determined, on the authority of Latreille,[*] to restore it to its former genus, in the next edition of that work. See *Lyttæ*.

CAPSICI BACCÆ. L.E.D. (Capsicum Annuum.)

Berries of the Capsicum.

QUALITIES. *Form*, pods, long, pointed, and pendulous; *Colour*, when ripe, a bright orange red. *Odour*, aromatic and pungent. *Taste*, extremely acrimonious and fiery. SOLUBILITY. Its qualities are partially extracted by water, but more completely by ether and spirit. CHEMICAL COMPOSITION. Cinchonia, resin, mucilage, and an acrid principle said to be alkaline.[†] INCOMPATIBLE SUBSTANCES. The Infusions of capsicum are disturbed by *Infusion of Galls; Nitrate of Silver; Oxy-muriate of Mercury; Acetate of Lead; the Sulphates of Iron, Copper, and Zinc; Ammonia, Carbonate of Potass and Alum*, but not by sulphuric, nitric, or muriatic acid. MEDICAL USES. It is a most powerful stimulant to the stomach, and is unaccompanied with any narcotic effect; as a gargle in cynanche maligna, and in relaxed states of the throat it furnishes a valuable remedy; combined with purgatives, it proves serviceable in dyspepsia, (*Form*: 78,) and in various diseases attended with cold feet, it has been recommended to wear socks dusted with Cayenne Pepper. **Forms of Exhibition.** It may be given made into pills with crumb of bread, or in the form of tincture, diluted with water; for the purpose of a gargle, a simple infusion in the proportion of gr. j to f℥j of boiling water, or fʒvj of the tincture to f℥viij of the *Infusum Rosæ*, may be directed. **Dose**, of the substance gr. vj to x, of the tincture fʒj to fʒij in an aqueous vehicle. **Off: Prep:** *Tinct: Capsici:* L.D.*

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[*] CANTHARIS VESICATORIA, Sp. 1, of Latreille,—"*Genera Crustaceorum et Insectorum*." Tom. 2. p. 220. A work which holds the highest rank in Entomology of any hitherto published.

[†] *Journal de Physique*, p. 173, 1820.

Cayenne Pepper is an indiscriminate mixture of the powder of the dried pods of several species of capsicum, but especially of the Capsicum *baccatum*, (Bird pepper.)

Adulterations. Cayenne pepper is generally mixed with *muriate of soda*, which deposes it to deliquesce. *Red Lead* may be detected by digesting it in acetic acid, and adding to the solution sulphuret of ammonia, which will produce, if any lead be present, a dark-coloured precipitate; or the fraud may be discovered by boiling some of the suspected pepper in vinegar, and after filtering the solution, adding to it sulphate of soda, when a white precipitate will be formed, which after being dried and exposed to heat, and mixed with a little charcoal, will yield a metallic globule of lead.

CARBO LIGNI. L.E.D. *Charcoal.*

Qualities. It is a black, inodorous, insipid, brittle substance; when newly prepared it possesses the property of absorbing very considerable quantities of the different gases; it is also capable of destroying the smell and taste of a variety of vegetable and animal substances, especially of mucilages, oils, and of matter in which *extractive* abounds; and some medicines are said to be even deprived of their characteristic odour by remaining in contact with it, as Valerian, Galbanum, Balsum of Peru, and Musk. The use of charring the interior of water casks, and of wrapping charcoal in cloths that have acquired a bad smell, depends upon this property; for the same reason it furnishes a very excellent tooth powder,† for which purpose, that which is obtained from the shell of the cocoa nut is to be preferred. None of the fluid menstrua with which we are acquainted have any action whatever as solvents upon carbon.* **Medical Uses.** It is antiseptic, and has been administered internally, to correct the putrid eructations which sometimes attend dyspepsia, but in order to produce this effect it should be newly prepared, or such as has been preserved from the access of air, for it operates by absorbing the putrid gas as well as by checking the decomposition of the undigested element. **Dose**, grs. x to ʒj. It has been lately asserted to possess powers as an antidote to arsenic; if this be true, its action can only be mechanical by absorbing like a sponge the arsenical solution, and thereby defending the coats of the stomach from its virulence.† Charcoal, when mixed with boiled bread, forms a very valuable poultice for foul and gangrenous sores. In a state of impalpable powder, it is said to be effectual as a styptic; Dr. Odier informs us that the celebrated *powder of Faynard*, for stopping hemorrhage, was nothing more than the charcoal of beech-wood finely powdered.

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* **Rymer's Cardiac Tincture.** In the former editions of this work an erroneous account of this medicine has been given, in consequence of a spurious specimen having been examined: the following analysis is now confidently presented to the profession. It is an infusion of Capsicum, Camphor, Cardamon seeds, Rhubarb, Aloes, and Castor in Proof Spirit, with a very small quantity of Sulphuric acid.

† **Lardner's Prepared Charcoal** consists of cretaceous powder, or chalk finely powdered, rendered gray by the addition of charcoal, or ivory black.

Charcoal is prepared for the purposes of medicine and the arts, from a variety of substances, viz.

Burnt Sponge. *Spongia Usta.* L. Consists of charcoal with portions of phosphate and carbonate of lime, and sub-carbonate of soda; it has been highly commended in bronchocele and scrofulous complaints, in the form of an electuary, or in that of a lozenge, and it has been lately asserted that it owes its power to the presence of Iodine.

Vegetable Æthiops. *Pulvis Quercus marinæ.* From the *fucus vesiculosus*, or bladder-wrack, used as the preceding.

Ivory Black. *Ebur Ustum.* From ivory shavings burned; used as a dentifrice and a pigment, under the name of "*blue-black*," for its hue is bluish; but bone-black is usually sold for it.

Lamp Black. *Fuligo Lampadum.* By burning resinous bodies, as the refuse of pitch, in furnaces of a peculiar construction.

Wood Soot. *Fuligo ligni*, collected from chimneys under which wood is burnt. It contains sulphate of ammonia, which imparts to it its characteristic bitterness. It has been considered antispasmodic, and a tincture was formerly prepared of it.

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* **Concentrated Solution of Charcoal.** A preparation is sold under this absurd name for cleaning the teeth.

† I apprehend that this property will explain how charcoal acts as a test for arsenic, which was discovered by Mr. Thomson. See London Dispensatory, second edition, page 53. "Into the suspected solution stir a moderate quantity of charcoal powder; allow it to settle, then pour of the supernatant liquid, and when the powder which remains is dry, sprinkle some of it on a hot poker, when, if the solution contained arsenic, the odour of garlic will be rendered sensible.

CARDAMOMI SEMINA. L.D. (Matonia* Cardamomum.) Amomum repens. E. *Cardamom Seeds.*

Qualities. *Odour*, aromatic and agreeable; *Taste*, warm and pungent, but unlike the peppers, they do not immoderately heat the stomach. Solubility. Water, alcohol, and æther extract their virtues; the two latter most completely, and the result is transparent, whereas the watery infusion is turbid and mucilaginous. Chemical Composition. Fecula, mucilage, and essential oil. Medical Uses. They are carminative and stomachic, and prove grateful adjuncts to bitter infusions; they are principally employed to give warmth to other remedies. Dose of the powder, gr. vj to ℈j. Officinal Prep: *Extract. Colocynth. comp.* (𝕭) L.D. *Tinct. Cardamomi*, L.E.D. *Tinct. Cardamom. comp.* L.D. *Tinct. Cinnamomi co.* (𝕭) L.E. *Tinct. Gentian. co.* (𝕮) L. *Tinct. Rhei*, (𝕭) L.E.D. *Tinct. Rhei cum Aloe*, (𝕭) E. *Tinct. Sennæ*, (𝕭) L.D. *Spir. Ether. Aromat.* (*b*) 𝕭 L. *Vinum Aloes socot.* (𝕭) E. *Confect. Aromat.* (*b*) 𝕭 L. *Pulv. Cinnamom. co.* (𝕭) L.E.D. *Pil. Scilliticæ*, (𝕭) E. *Infus. Sennæ.* D. (𝕭.)

Cardamom seeds should be kept within their husks, or their virtues will soon be considerably impaired; they are frequently mixed with *grains of paradise*, which are much hotter, and more spicy, but less aromatic in their flavour.

CARICÆ FRUCTUS. L.D. Fici Caricæ Fructus. E. *The preserved Fruit of the Fig.*

Qualities of the dried fig are too well known to require description. The fig consists almost entirely of mucilage and sugar. Uses. It has been already stated that the most ancient cataplasm on record was made of figs, (2 Kings, chap. xx. 7,) they are employed medicinally in many demulcent decoctions, as *Decoctum Hordei comp.* L.D. They are gently aperient; it is curious to learn that they constituted the chief part of the food of the ancient Athletæ.

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* Dr. Maton in a learned critical and botanical note to a paper on the Cardamom, by Mr. White, Surgeon at Bombay, (*Trans : Lin : Soc :* v. x. 229,) called the genus, of which it consists, *Elettaria*, a nomenclature which was accordingly adopted by the College in their late Pharmacopœia; but, says Sir James Smith, as this name is of a barbarous origin, (viz. from *Elettari*, the Malabar name of the plant,) we should greatly prefer that of *Matonia*; a suggestion which has been since adopted by Mr. Roscoe of Liverpool, in his description of the *Scitamineæ*. The College has therefore the gratifying task of erasing the term *Elettaria* from their Materia Medica, and of substituting for it a name, no less known than respected by the medical profession.

CARYOPHYLLI. L.

(Eugenia Caryophyllata. *The unopened flowers dried.*)
Caryophilli Aromatici Germen, E.
Caryophylli aromat. Calyx, D. *Cloves.*

Cloves are the unexpanded flowers, or flower-buds, of the clove tree, which are first obtained when the tree is six years old; they are gathered in October and November, before they open, and when they are still green; and are dried in the sun, after having been exposed to smoke at a heat of 120°, till they assume a brown hue. It is a curious fact that the flowers when fully developed are quite inodorous, and that the real fruit is not in the least aromatic. **Qualities.** *Form*, that of a nail, consisting of a globular head, formed of the four petals of the corolla, and four leaves of the calyx not yet expanded; and a germen situated below nearly cylindrical, and scarcely an inch in length. *Odour*, strong, fragrant, and aromatic, *Taste*, acrid, aromatic, and permanent.

Solubility. Water extracts their odour, but little of their taste; alcohol and ether take up both completely. **Medical Uses.** They are more stimulant than any of the other aromatics; they are sometimes given alone, but more generally as a corrigent to other medicines. **Officinal Prep.** *Infusum Caryophyllorum.* L. *Spir. Lavand. co.* D. (16) **Frauds.** The Dutch frequently mix the best cloves with those from which the oil has been drawn.

Caryophyllorum Oleum. This essential oil, in consequence of the resinous matter which it holds in solution, has a specific gravity of 1·020, and consequently sinks in water. When the oil has a hot fiery taste, and a great depth of colour, it is adulterated. It is imported from the spice islands. On account of its stimulant properties, it is added to griping extracts, or used as a local application in the toothach. Vauquelin obtained from the leaves of the *Agathophyllum ravensara* an essential oil, in every respect similar to that of cloves.

CASCARILLÆ CORTEX. L.D. (Croton Cascarilla.)
Croton Eleutheria. E.

Cascarilla Bark.

Qualities. *Form*, curled pieces, or rolled up into short quills; its fracture is smooth and close, of a dark brown colour; *Odour*, light and agreeable; when burning, it emits a smell resembling that of musk, which at once distinguishes it from all other barks. *Taste*, moderately bitter, with some aromatic warmth. **Chemical Composition.** Mucilage, bitter extractive, resin, volatile oil, and a large proportion of woody fibre; neither *Cinchonia* nor *Quina* has hitherto been discovered in it. **Solubility.** Its active constituents are partially extracted by alcohol and water, and completely by proof spirit. **Medical Uses.** Carminative and tonic; it is an excellent adjunct to cinchona, rendering it by its aromatic qualities more agreeable to the stomach, and increasing its powers. It is valuable in dyspepsia and flatulent cholic, in dysentery and diarrhœa, and in the gangrenous thrush peculiar to children. **Forms of Exhibition.** It is most efficacious in substance; it may, however, be given in the form of infusion or tincture. Decoction dissipates its aromatic principle; the extract therefore merely acts as a simple bitter. See *Infus. Cascarillæ.* **Dose**, of the powder, grs. xij to ʒss. **Officinal Preparations.** *Infus. Cascarill.* L. *Tinct. Cascarill.* L.D. *Extract Cascarill.* D.

CASSIÆ PULPA. L.E.D. (Cassia Fistula, *Lomentorum Pulpa.*)
Cassia Pulp.

The fruit is a cylindrical pod scarcely an inch in diameter, but a foot or more in length; the exterior is a hard brown bark; the interior is divided into numerous transverse cells, each of which contains on oval seed imbedded in a soft black pulp. **Qualities.** *Odour*, faint, and rather sickly. *Taste*, sweet, and mucilaginous. **Solubility.** Nearly the whole of the pulp is dissolved by water, partially by alcohol and sulphuric ether. **Chemical Composition.** Sugar, gelatine, glutine, gum, and a small portion of resin, extractive, and some colouring matter. **Uses.** It is gently laxative, and is adapted for children, and very delicate women, but it should be always given in combination with manna, or some other laxative, or it is apt to induce nausea, flatulence, and griping. **Officinal Preparations.**

Confectio Cassiæ, L.E.D. *Confectio Sennæ* ([illegible].[illegible].) L.E.D.* There are two kinds of this drug in the market; that from the West Indies, the pods of which are generally large, rough, thick rinded, and contain a nauseous pulp; and that from the East Indies, which is to be preferred, and which is distinguished by smaller and smoother pods, and by their containing a much blacker pulp. The pulp ought not to have a harsh flavour, which arises from the fruit having been gathered before it was ripe, nor ought it to be sour, which it is very apt to become by keeping. The heaviest pods, and those in which the seeds do not rattle, are to be preferred.

[CASSIA MARILANDICA. *W.* II. 524. *Bw.* II. 166. *Bn.* I. 137. *Planta.*

American Senna. The Plant.

Specific Character. Somewhat glabrous; leaves in eight pairs, lance-oblong, mucronate: flowers in axillary racemes, and in terminal panicles: ligumes linear curved. Grows in all the southern and western States, rising to the height of four or five feet; flowers in July and August. Its botanical features very much resemble those of the Cassia Senna. Chemical Composition. Resin, extractive and volatile matter. Solubility. Its virtues are extracted by water. Medicinal Qualities. It is cathartic, "little if at all, inferior," says Professor W. C. P. Barton, "to the senna of the shops, and is doubtless one of the most important of our indigenous medicines. I have substituted it for the Alexandria Senna, and have had reason to confirm the high character which it has long maintained. I have made use of the dried leaves and follicles, carefully rejecting the stalks, and beg leave to recommend this manner of employing the plant for medicinal purposes. I believe the best time for collecting it would be when the pods are ripe, which is about the last of August."† Dose, ℥j of the leaves infused in boiling water.—I.]

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* Essence of Coffee. The Cassia pulp is said to form the basis of this article.

† Vid. Vegetable Materia Medica of the United States, vol. I.

CASTOREUM, L.E.D. . (Castor Fiber. (*Rossicus.*)
Castor. *Concretum sui generis.*)

This substance is secreted by the beaver in bags near the rectum.* Qualities. *Odour*, strong and aromatic. *Taste*, bitter, sub-acrid, and nauseous. *Colour*, reddish brown. Chemical Composition. Volatile oil, resin, mucilage, extractive, iron, and small portions of the carbonates of potass, lime, and ammonia. The Canadian variety is also stated by Laugier to contain benzoic acid both free and combined. Solubility. Its active matter is dissolved by alcohol, proof spirit, and partially by water; the tincture made with alcohol is the least nauseous, and the most efficacious; the spirit of ammonia is also an excellent menstruum, and in many cases improves its virtues. Forms of Exhibition. It may be given in substance as a bolus, or in the form of tincture, but its exhibition in the form of extract or decoction is chemically incorrect. Dose, grs. x to ℈j, and in clysters to ʒj. Medical Uses. It is antispasmodic, and seems to act more particularly on the uterine system. It certainly proves beneficial as an adjunct to anti-hysteric combinations; it was highly esteemed by Van Swieten, De Haen, and many other German practitioners. Baglivi states that it counteracts the narcotic powers of opium, but this is not the case. Off. Prep. Tinct. Castorei.† L.E.D. Adulter. It is sometimes counterfeited by a mixture of dried blood, gum ammoniacum, and a little real castor, stuffed into the scrotum of a goat; the fraud is detected by comparing the smell and taste with those of real castor; and by the deficiency of the sebaceous follicles, which are always attached to genuine specimens. There are two kinds in the market, the Russian and Canadian, the former, however, which is the best, has become extremely scarce; it may be distinguished from the latter, by being larger, rounder, heavier, and less corrugated on the outside.

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* The ancients erroneously considered them as the testicles of the beaver, and Æsop relates that the animal bit them off, when pursued by the huntsman, whence some have derived its name, *a castrando*; the true origin however of the word is from γαστωρ, i. e. animal *ventriculosum*, from his swaggy and prominent belly.

† Bateman's Pectoral Drops consist principally of the Tincture of Castor, with portions of camphor and opium, flavoured by anise seeds, and coloured by cochineal.

CATECHU EXTRACTUM, L.E.D.

(Acacia Catechu, *Extractum.*)

Catechu; olim *Terra Japonica. Japan Earth.*

Qualities. There are two varieties of catechu in the market, the one of a light yellowish, the other of a chocolate colour; they differ only in the latter having a more austere and bitter taste. Chemical Composition. Tannin, gallic acid, a peculiar extractive matter, mucilage, and earthy impurities. Solubility. It is almost totally dissolved both by water and spirit. Incompatible Substances. Its astringency is destroyed by alkaline salts; and precipitates are produced by metallic salts, especially by those of iron; and with gelatine it forms an insoluble compound. Medical Uses. It is a most valuable astringent. Forms of Exhibition. In infusion, tincture, or powder. (*Form.* 51, 52, 58, 151.) In the form of a lozenge, from its gradual solution, it may be very advantageously applied in relaxed states of the uvula and fauces; I have found this remedy successful in cases where the *sulphate of zinc* was inefficient. From its great astringency it also forms an excellent dentifrice, especially when the gums are spongy; for this purpose I have employed equal parts of powdered catechu, and Peruvian bark, with one-fourth the quantity of the powder of myrrh. Dose, grs. x to ℈j. Officinal Prep. *Infus. Catechu, Tinct. Catechu,* L.E.D. *Electuarium Mimosæ Catechu,* E.D.

CENTAURII CACUMINA. L.E.D.

(Chironia Centaurium[*] *Cacumina.*)

The flowering tops of the common Centaury.

Qualities. *Odour*, none; *Taste*, intensely bitter. Chemical Composition. Mucilage, resin, and bitter matter. Solubility. Alcohol and water dissolve all its active matter. Med. Uses. All its value depends upon its bitterness. It entered into the composition of the once celebrated *Portland Powder* for the gout, for an account of which see vol. 1, p. 52. Dose, of an infusion, made in the proportion of ℥j to oj of boiling water, f℥ij; of the dry powder ʒj.

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[*] So called from Chiron the Centaur, who is said to have employed it to cure himself of a wound accidentally received by letting one of the arrows of Hercules fall upon his foot.

CERA. L.E.D. *Wax.*

It is admitted into the list of the Materia Medica under two forms, viz.

1. **Cera Flava.** *Yellow, or Unbleached Wax.*

Qualities. *Odour*, faintly honey-like; it is brittle yet soft; when chewed, it does not, if pure, adhere to the teeth; it melts at 142°, and burns entirely away. **Chemical Composition.** It is the honey-comb of the bee melted with boiling water, pressed through cloth bags, and ultimately cast into round cakes for the market. Whether it be an animal product, or a vegetable substance merely collected by the bee, has been a question of dispute; the former opinion is probably correct, although wax is certainly produced as a secretion by many plants. The yellow wax contains a portion of pollen, which imparts its colour to it, and increases its fusibility. **Solubility.** It is insoluble in water, and in cold alcohol or ether, but it is soluble in boiling alcohol and ether, in fixed oils, and in alkalies. **Uses.** It is chiefly employed in the composition of external applications. **Adulterations.** *Earth* or *peas-meal* may be suspected when the cake is very brittle, and the colour inclines to gray; *Resin* is detected by putting it in cold alcohol, which will dissolve the resinous part without acting on the wax. *Tallow* is discovered by the greater softness and unctuosity of the cake, and by its suffocating smell when melted; when this latter substance is employed, turmeric is added to disguise its paleness.

2. **Cera Alba.** *White, Bleached, or Virgin's Wax:*

Qualities. This subtance differs only from the former, in being colourless, harder, heavier, and less fusible. **Uses.** It is said to be demulcent, and very useful in dysentery, but it is rarely used. **Forms of Exhibition.** It may be formed into a mixture by melting it with one-third of its weight of soap, and then gradually adding to it any mucilaginous liquid. **Adulterations.** *White Lead* may be detected by melting the wax in water, when the oxide will fall to the bottom of the vessel; *tallow* may be suspected when the cake wants its usual translucency.

CERATA. L.E. Cerates.

These compositions are characterized by a degree of consistence, intermediate between that of plasters, and that of ointments. As this consistence is obtained from the wax which they contain, they very properly derive from that substance the generic appellation of *Cerates*.

Ceratum Calaminæ. L. (*Ceratum lapidis Calaminaris. P.L.* 1787. *Ceratum epuloticum. P.L.* 1745.) Ceratum Carbonatis Zinci Impuri. E. Unguentum Calaminare. D.—These preparations have been long known under the name of *Turner's Cerate;* they form the basis of many extemporaneous cerates, in some of which nitric oxide of mercury, in the proportion of ʒj of the oxide to ℥j of cerate, and in others, the liquor of sub-acetate of lead, are introduced. By the former combination we obtain a very useful application to indolent, and ill-conditioned ulcers, a valuable stimulant for inducing an action conducive to the regeneration of parts. By the latter combination we derive a remedy highly extolled, by our most experienced surgeons, in the cure of burns and scalds.

Ceratum Cetacei. L. (*Ceratum Spermatis ceti. P.L.* 1787. Ceratum Album, P.L. 1745.) Ceratum Simplex. E. It furnishes a soft and cooling dressing, and constitutes a convenient basis for more active combinations, as in the following instance.

Ceratum Lyttæ. L. (*Ceratum Cantharides. P.L.* 1787.) The basis of this preparation is spermaceti cerate *six parts*, to which is added of powdered flies *one part:* as it is intended to promote a purulent discharge from a blistered surface, it may be reduced in strength according to circumstances.

Ceratum Plumbi Super-acetatis. L. (*Unguentum Cerussæ Acetatæ, P.L.* 1787.) This is cooling for burns, excoriations, and inflamed surfaces.

Ceratum Plumbi Compositum. L. (*Cerat: Lithargyri acetati compositum. P.L.* 1787.) This is "*Goulard's Cerate,*" and is applicable to the same cases as the former cerate; the camphor which enters into its composition imparts a gently stimulating power to it; it proves extremely serviceable in chronic ophthalmia of the tarsus, and for the increased secretion of tears, which so frequently affects the eyes of persons advanced in years.

Ceratum Resinæ. L. (*Ceratum resinæ flavæ, P.L.* 1787. *Ceratum citrinum.* 1745. *Yellow Basilicon.*) Unguent: Resinosum, E. Unguent: Resinæ albæ. D. It is stimulant, digestive, and cleansing, and affords a very excellent application for foul and indolent ulcers.

Ceratum Sabinæ. L. *Savine Cerate.* It is intended to keep up a purulent discharge from a blistered surface; in practice however it is often found to fail from the difficulty of obtaining it good, since the acrid principle of the plant is injured by long boiling, and by being previously dried; the ointment also loses its virtue by exposure to the air.

Ceratum Saponis. L. This preparation was much used and recommended by the late Mr. Pott; in preparing it the greatest possible caution is required; the fire should never be too rapidly applied, the stirring should be uniform and incessant, and the heat should only be sufficient to keep the two compositions liquid at the time when they are united. The original intention of the cerate was to afford, when spread upon linen, a mechanical support to fractured limbs, and to keep the points of the bone in due apposition, while in consequence of the *acetate of lead* which is formed in the first stage of the process for its preparation, it possesses the virtues of a saturnine dressing. As a mechanical agent it may prove at once effectual and dangerous, for if it be applied before all inflammation and swelling have entirely disappeared, the inflamed vessels may be completely strangulated by its unrelenting pressure, and high erysipelatous inflammation, and a rapid state of gangrene may be the result.

Ceratum Simplex. A useful application to excoriations and sores.

Besides the above cerates, there are many magistral* preparations, of great practical value, and I must refer the surgical student for an account of them to that very useful little manual, entitled "*Pharmacopœia Chirurgica.*"

CETACEUM. L.

(Physeter Macrocephalus, *Concretum sui generis.*
Spermaceti. E.D.

Qualities. *Form*, flakes, which are unctuous, friable, and white. *Odour* and *taste*, scarcely perceptible. *Sp. Grav.* 9·433. It melts at 112°. **Chemical Composition.** It is a peculiar modification of fatty matter. **Solubility.** It is insoluble in water and cold alcohol, but soluble in hot alcohol, ether, and oil of turpentine, but it concretes again as the fluids cool; in the fixed oils it is completely soluble. The alkaline carbonates do not affect it, but it is partially dissolved in the pure alkalies, and with hot ammonia it forms an emulsion which is not decomposed on cooling. Uses. It is demulcent and emollient, but it possesses no advantages over the bland oils. Forms of Exhibition. It may be suspended in water by means of mucilage or yolk of egg. (*Formulæ* 76, 78, 79.) Officinal Prep. *Ceratum Simplex*. E. *Ceratum Cetacei*. L. *Unguent. Cetacei*. L.D. From exposure to hot air, it becomes rancid; but it may be again purified, by being washed in a warm solution of potass.

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* **Kirkland's Neutral Cerate.** Is formed by melting together ℥viij of Lead Plaster with f℥iv olive oil, into which are to be stirred ℥iv of prepared chalk; when the mixture is sufficiently cooled f℥iv of acetic acid, and ʒiij of pulverised super-acetate of lead are to be added, and the whole is to be stirred until nearly cold.

Marshall's Cerate. ℞. Palm Oil ℥v. Calomel ʒi. Super-acetate of Lead ℥ss, Nitrate of Mercury ℥ij.

Cold Cream, (*Ceratum Galeni.*) Ol: Amygdal: ℔j, Ceræ alb: ℥iv; melt, pour into a warm mortar, and add, gradually, Aq: Ros: oj. It should be very light and white. *Gray's Supplement.*

[CHENOPODIUM ANTHELMINTICUM.

W. I. 1304. *Bn*. II. 183. *Planta*.

Worm-seed. Jerusalem-oak. The Plant.

Specific Character. Leaves ovate, oblong, rarely toothed; racemes leafless; styles three. Rises to the height of ten or fifteen inches; flowers in July and August; grows plentifully throughout the United States. Sensible Properties. *Taste*, acrid, bitter, and exceedingly unpleasant. *Odour*, pungent, fetid and disgusting. Chemical Composition. Essential oil appears to be its only constituent possessing medicinal virtue, and this is yielded in different degrees to alcohol, water, and milk. Medical Use. It is an efficacious vermifuge, and when taken every three hours for two or three days in succession, and followed by an active cathartic, it perhaps as seldom fails of success as any article belonging to this uncertain and fallacious class of remedies. It also possesses some value as an antispasmodic, and is a tolerably good substitute for assafœtida. Medicinal Preparations. A decoction prepared by boiling ℥j of the plant in Oj of water or milk —the expressed juice of the plant—the essential oil, obtained from the seeds—the seeds in substance. Doses, ℥j to ℥ij of the decoction; ʒss to ʒj of the expressed juice; gutt. v to gutt. x of the oil; ℈j of the seeds.—I.]

CINCHONA. L.E.D. *Bark. Peruvian Bark.*

Jesuit's Bark.

Notwithstanding the labours of the Spanish botanists, the history of this important genus is still involved in considerable perplexity, and owing to the mixture of the barks of several species,* and their importation into Europe under one common name, it is extremely difficult to reconcile the contradictory opinions which exist upon the subject, nor indeed would such an investigation be consistent with the plan and objects of this work. Under the trivial name *officinalis*, Linnæus confounded no less than four distinct species of cinchona, and under the same denomination the British Pharmacopœias, for a long period, placed as varieties the three barks known in the shops; this error indeed is still maintained in the Dublin Pharmacopœia, but the London and Edinburgh colleges have at length adopted the arrangement of Mutis, a celebrated botanist, who has resided in South America, and held the official situation of Director of the exportation of bark for nearly forty years.

CINCHONÆ CORDIFOLIÆ CORTEX. L.E. Cortex Peruvianus. D. Heart-leaved Cinchona bark, commonly called *Yellow* Bark.

CINCHONÆ LANCIFOLIÆ CORTEX. L.E. Cortex Peruvianus. D. Lance-leaved Cinchona Bark, common *Quilled* bark.—*Pale* bark.

CINCHONÆ OBLONGIFOLIÆ CORTEX. L.E. Cortex Peruvianus. D. Oblong-leaved Cinchona bark, called *Red* bark.

QUALITIES. The *odour* and *taste* of these three species are essentially the same, although they differ in intensity. They are all bitter, subastringent, and aromatic, but the flavour of the *Yellow* bark is incomparably the most bitter, although less austere and astringent, whilst the red bark has a taste much less bitter, but more austere and nauseous than either of the other species. CHEMICAL COMPOSITION. Few vegetable substances have been more frequently, or more ably submitted to chemical analysis, than the Peruvian bark, and yet but few results of any great practical utility had been obtained previous to the recent experiments of Pelletier and Caventou, communicated to the Academy of Sciences at Paris, since the publication of the fourth and last edition of the present work.

Dr. Maton† had several years ago observed, that an infusion of nut-galls produced a precipitate with the decoctions of bark; a fact which necessarily produced considerable speculation.

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* There are no less than twenty-five distinct species of Cinchona, independent of any additions which we may owe to the zeal of Humboldt and Bonpland; and Mr. A. T. Thomson, in his London Dispensatory, states that in a large collection of dried specimens, of the genus Cinchona, in his possession, collected in 1806, both near Loxa and Santa Fé, he finds many species which are not mentioned in the works of any Spanish botanist.

† See *London Medical and Physical Journal*. Vol. v. p. 83.

Seguin was induced to regard it as arising from the presence of *gelatine* (*see vol.* i. *p.* 80,) an opinion which Dr. Duncan proved to be erroneous, and showed that it depended upon a new proximate principle to which he assigned the name of *Cinchonine*. Besides which, bark was considered as containing resin, extractive, gluten, tannin, a small portion of volatile oil, and some salts with a base of lime; one of which, however, had been only found in *Yellow* bark, and had been discovered to contain a peculiar vegetable acid, denominated by Vauquelin *Kinic*, a name which Dr. Duncan very judiciously superseded by that of *Cinchonic* acid.

In the *Red* bark, Fourcroy detected also a portion of citric acid, some muriate of ammonia, and muriate of lime. Upon which of these principles the tonic and febrifuge virtues of bark depends, has ever proved a fruitful source of controversy, nor is the question even now set at rest, notwithstanding the new light which has recently broke in upon it. Deschamps attributed them to *Cinchonate of Lime*, and asserted that two doses of thirty-six grains each, would cure any intermittent.* Westring considered *Tannin* as the active constituent; while M. Seguin assigned all the virtues to the principle which precipitates gallic acid, and which, as it has been before stated, he mistook for gelatine. Fabroni concluded from his experiments that the febrifuge power of the bark did not belong exclusively and essentially to the astringent, bitter, or to any other individual principle, since the quantity of these would necessarily be increased by long boiling, whereas the virtues of the bark are notoriously diminished by protracted ebullition. This argument, however, will not go far, when we consider the chemical changes which the liquid is known to suffer during that operation, and by which a considerable portion of its matter is rendered insoluble. Such was the state of our knowledge respecting the composition of the *Cinchona*, when Pelletier and Caventou, guided by analogy, were led to infer the presence of an alkaline element of activity in its composition. The merit belonging to the researches of these eminent chemists does not so much consist in the discovery of new elements, as in the proofs which they have furnished of the well-known principle, *Cinchonine*, being a salifiable base, and in demonstrating the peculiar states of combination in which it exists in the different species of Cinchona.

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* Essential Salt of Bark. It is highly necessary that the public should know that the preparation sold under this empirical title, has no relation whatever to the late discoveries of Pelletier. It is merely an extract prepared by macerating the bruised substance of bark in cold water, and submitting the infusion to a very slow evaporation.

1. *Cinchona Lancifolia.*

Their analysis of the *Pale Bark*, furnished the following principles.

1. *Acidulous Kinate of Cinchonia.**
2. *A green fatty matter.*
3. *Red colouring matter, slightly soluble.*
4. *Ditto soluble.* (Tannin.)
5. *Yellow colouring matter.*
6. *Kinate of lime.*
7. *Gum.*
8. *Starch.*
9. *Lignim.*

Cinchonia, when obtained in an isolated form, is distinguished by the following characters and habitudes.

It is white, transparent, and crystallizes in the form of needles; it has but little taste, a circumstance depending upon its comparative insolubility, as it requires no less than 7000 parts of water for its solution; in alcohol and the acids it is more soluble, and imparts to such menstrua the characteristic bitter of the bark; it dissolves only in small quantities in the fixed and volatile oils, or in sulphuric ether. With acids it combines and forms neutral salts, of which the solubility and crystalline form vary with the acid employed.

Sulphate of Cinchonia, easily crystallizable and moderately soluble, and has been found to consist of *Cinchonia* 100, *Sulphuric acid* 13·02.

Nitrate of Cinchonia, uncrystallizable, and sparingly soluble.

Muriate of Cinchonia, crystallizes in very beautiful needles, and is more soluble than the preceding salts.

Oxalate of Cinchonia, nearly insoluble; hence by pouring oxalic acid, or oxalate of ammonia into solutions of any of the soluble salts of cinchonia, we obtain a very white and abundant precipitate, which might be mistaken for oxalate of lime; it is, however, soluble in an excess of acid, and in alcohol.

Gallate of Cinchonia, equally as insoluble as the *Oxalate*, whence the precipitate occasioned by pouring an infusion of galls into the decoctions of genuine cinchona.

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* The designation of *Cinchonin*, consistent with the principles of chemical nomenclature, must now have a termination in *a*, and the name *Cinchonia* appears preferable to that of *Cinchonina*.

Cinchonia, when heated, does not fuse before decomposition. Its ultimate elements are *oxygen*, *hydrogen*, and *carbon*; the latter being predominant. It does not appear to contain any *nitrogen*.

The *Kinic acid*, which exists in native combination with the *Cinchonia*, among several other peculiar properties, is convertible by means of heat into a substance (*acide pyrokinique*,) which is crystallizable, and capable of producing with iron a most beautiful green colour.

2. *Cinchona Cardifolia*.

In the *Yellow Bark*, these chemists discovered also a salifiable base, quite distinct, however, in its character and habitudes from *Cinchonia*; they accordingly have designated it by another name, viz. *Quinine*, but which we shall hereafter call *Quina*. In speaking of these two bases, the authors compare them, in point of dissimilarity, to the fixed alkalies, potass and soda. *Quina* is distinguished from *Cinchonia* by the following characters. It cannot, like this latter body, be crystallized by evaporation from its alcoholic solution, although it may be obtained in transparent plates. *It is very soluble in æther*; in water it is as insoluble as Cinchonia, but its taste is much more bitter. The salts which it forms are different from those of cinchonia, both in the proportion of their elements, and in the properties which they possess, being generally much more bitter. In comparing their composition, *Quina* will appear to have less capacity of saturation* than cinchonia.

Sulphate of Quina. It forms crystals quite remarkable for their satin-like and pearly lustre. It is soluble in cold water; a property which is very considerably increased by an excess of acid.†

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* Thus, as we have stated, 100 parts of *Cinchonia* unite with 13.021 of Sulphuric acid, while the same weight of *Quina* requires for saturation not more than 10 91 of the same acid.

† Sulphate of Quina. As this preparation is considered the most active form of the salifiable principle of bark, I have subjoined the most approved formula for its preparation. Boil for half an hour two pounds of the appropriate bark in powder in sixteen pints of distilled water, acidulated with two fluid-ounces of sulphuric acid; strain the decoction through a linen cloth, and submit the residue to a second ebullition in a similar quantity of acidulated water; mix the decoctions, and add by small portions at a time, powdered lime, constantly stirring it to facilitate its action on the acid decoction. (Half a pound is near the quantity requisite.) When the decoction has become slightly alkaline it assumes a dark brown colour, and deposits a reddish brown floculent precipitate, which is to be separated by passing it through a linen cloth. The precipitate is to be washed with a little cold distilled water and dried. When dry it is to be digested in recti-

Acetate of Quina, very remarkable for the great facility with which it crystallizes, and for the pearly aspect and agreeable stellated grouping of the crystals; whereas the acetate of cinchonia crystallizes with difficulty, and simply in plates transparent, and devoid of lustre.

Quina forms with the oxalic and gallic acids, salts, as insoluble as those which the same acids form with *Cinchonia*.

3. *Cinchonia Oblongifolia*.

The *Red Bark* upon analysis was found to contain a double basis, and to yield both *Cinchonia* and *Quina*, and what is still more extraordinary, the quantity of each exceeded that which is known to exist in the *gray* and yellow *barks*.

Having thus furnished a sketch of this curious discovery, we have next to inquire whether the alkaline bases in question do actually concentrate all the virtues of the barks in which they reside? M. Majendie* informs us that Pelletier had very early after the discovery transmitted to him a portion of the new substances for trial, and that he has unequivocally determined that they do not possess any deleterious qualities,† and are therefore essentially different from the principles of *Nux vomica*, (*Strychnine*,) Opium, (*Morphia*,) &c. According to the testimony of Dr. Double, as related in the same journal, they would seem to possess the medicinal properties of the cinchona.

In the third number of *Majendie's Journal* we receive a report from M. le docteur Renauldin, of an intermittent cured by the *Sulphate of Cinchonia*, in doses of six grains.

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fied spirit, with a moderate heat, for some hours; the liquid is then to be decanted, and fresh portions of spirit added till it no longer acquires a bitter taste. Unite the spirituous tinctures, and distil in a water-bath till three-fourths of the spirit employed has distilled over. After this operation there remains in the vessel a brown viscid substance covered by a bitter very alkaline and milky fluid. The two products are to be separated and treated as follows. To the alkaline liquid add a sufficient quantity of sulphuric acid to saturate it; reduce it by evaporation to half the quantity; add a small portion of charcoal, and after some minute ebullition, filter it whilst hot, and crystals of *Sulphate of Quina* will form. The brown mass is to be boiled in a small quantity of water, slightly acidulated with sulphuric acid, which will convert a large portion of it into *Sulphate of Quina*. The crystals are to be dried by bibulous paper. Two pounds of bark will, it is said, yield 5 to 6 drachms of the sulphate; of which 8 grains are considered equivalent to an ounce of bark.

* Journal de Physiologie. No. 1, p. 90.

† Upon this point however a difference of opinion exists; M. Halle entertains considerable fears on the subject, which have been confirmed by M. M. Larrey, Emery, Duponchel, and others, who have communicated to the Société Médicale d'Emulation, facts which justify their apprehensions.

As the discovery of an alkaline element in opium led the way to the detection of salifiable bases in other active vegetables,* it has seemed to me preferable that I should introduce those general observations which I wish to offer upon the subject of these bodies, under the history of that narcotic. It is only necessary in this place to caution the practitioner against the hasty generalizations of the too sanguine chemist; it has already been observed that those vegetable remedies, whose value has been established by the sober experience of ages, consist of different principles of activity, or, at least, owe a modified power to the compound effect of their several ingredients. (*See Vol. I. p.* 188, *note*, and p. 202.)

Solubility of the Bark. Cold water extracts its bitter taste, with some share of its odour; when assisted by a moderate heat, the infusion is stronger, but becomes turbid as it cools; the infusion cannot be kept, even for a short time, without undergoing decomposition, and being spoiled; wine also extracts the virtues of bark, and is prevented by this substance from becoming sour, a fact which probably depends upon the avidity with which some of the principles of bark combine with oxygen, and which may throw some light upon the cause of its antiseptic virtues. The colouring matter of wine is precipitated by bark, as it is by charcoal, in the course of a few days. By decoction the active matter of cinchona is in a great degree extracted, but if the process be protracted beyond eight or ten minutes, it undergoes a very important chemical change, the precise nature of which is not well understood; the balance of affinities, however, by which the different elements are united, is evidently overthrown, and a considerable precipitation ensues; oxygen would also appear to have been absorbed; whether the *Cinchonia* becomes insoluble has not yet been ascertained, but experience has shown that the general loss of solubility, produced by such a process, is accompanied with a corresponding loss of medicinal activity; on which account the extract is necessarily a very inefficient preparation; if we attempt to re-dissolve it, not more than one half is soluble in water. Vinegar is a less powerful solvent than water, the active matter of bark is rendered more soluble by the addition of mineral acids, and by the earths and alkalies; these latter bodies deepen its colour; *lime water* has been recommended as a solvent, and it affords an excellent form for children and dyspeptic patients; for the same reason we obtain a stronger, and perhaps a more efficient preparation, by triturating it with magnesia, previous to the process of infusion. Alcohol is a very powerful solvent, but the great activity of this menstruum so limits its dose that we are prevented from exhibiting a sufficient quantity of the bark in the form of tincture; it furnishes, however, an excellent adjunct to other preparations.

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* *Cinchonia* has been detected in other vegetables besides the Bark, as in the root of *Cusparia*, and in the berries of *Capsicum*, while in the bark of *Cascarilla*, a substance bearing a much nearer relation in medicinal effect to the Bark, its presence has not been discovered. It is said that experiments have been lately made by M. M. Robiquet and Petroz on the Bark of the *Carapa*, which has been successfully used in several parts of America in the cure of agues, and that they have found in that bark a salifiable basis analogous to *Quina*.

Incompatible Substances. Precipitates are produced by the *salts of iron*, *sulphate of zinc*, *nitrate of silver*, *oxymuriate of mercury*, *tartarized antimony*, *solutions of arsenic*, *&c.* Any considerable portion of a tincture produces also a precipitation, which sometimes does not immediately take place, and the medicinal value of the bark is probably not impaired by it. As the infusions of *nut-galls* and some other vegetable astringents precipitate the cinchonia from bark, it becomes a question how far such liquids are medicinally compatible; saline additions, as *alum*, *muriate of ammonia*, *&c.* have been frequently proposed, but in many such mixtures decompositions arise which must deceive us with regard to the expected effects. **Forms of Exhibition.** No form is so efficient as that of powder, a fact which argues greatly against the exclusive value of the *Cinchonia;* even the ligneous fibre which the chemist pronounces to be inert and useless, may produce its share of benefit by modifying the solubility of the other ingredients, or by performing some mechanical duty which we are at present unable to understand or appreciate; but where the stomach rejects it, it must be administered in *infusion* or *decoction*, with the addition of its *tincture*. In cases where it is necessary to join cordials, an infusion of bark in Port wine is a popular and very useful form for its administration.* **Dose** of the powder, gr. v to ʒij, or more, or of the infusion or decoction ℥ij. **Medical Uses.** It is powerfully tonic and antiseptic; it was introduced into practice for curing intermittent fevers, but since that period it has been generally used in diseases of debility, in fevers of the typhoid type, and in gangrene. It was first conjectured to be useful in gout by Sydenham, and Dr. Haygarth has strongly recommended its exhibition in acute rheumatism; when, however, it is used in these diseases, the greatest attention ought to be paid to the state of the bowels, and purgatives should be occasionally interposed. In Dyspepsia the use of the purer bitters is to be greatly preferred to that of the bark. OFFICINAL PREP. *Infus. Cinchonæ*, L.E.D. *Decoct. Cinchon.* L.E.D. *Extractum Cinchon.* L.E. *Extract. Cinchonæ resinosum.* L.D. *Tinct. Cinchonæ*, L.E.D. *Tinct. Cinchonæ comp.* L.E.D. *Tinct. Cinchon. Ammoniat.* L. MAGISTRAL FORMULÆ. 31, 37, 40, 44, 127. ADULTERATIONS. The frauds committed under this head are most extensive; it is not only mixed with inferior barks, but frequently with genuine bark, the active constituents of which have been entirely extracted by decoction with water. In selecting cinchona bark, the following precautions may be useful; it should be dense, heavy, and dry, not musty, nor spoiled by moisture; a decoction made of it should have a reddish colour when warm; but when cold, it should become paler, and deposite a brownish red sediment. When the bark is of a dark *colour*, between red and yellow, it is either of a bad species, or it has not been well preserved. Its *taste* should be bitter, with a slight acidity, but not nauseous, nor very astringent; when chewed, it should not appear in threads, nor of much length; the *odour* is not very strong, but when bark has been well cured, it is always perceptible, and the stronger it is, provided it be pleasant, the better may the bark be considered. In order to give bark the form of *quill*, the bark gatherers not unfrequently call in the aid of artificial heat, by which its virtues are deteriorated; the fraud is detected by the colour being much darker, and upon splitting the bark, by the inside exhibiting stripes of a whitish sickly hue. In the form of powder, cinchona is always found more or less adulterated. During a late official inspection of the shops of apothecaries and druggists, the Censors repeatedly met with powdered cinchona having a harsh metallic taste, quite foreign to that which characterizes good bark.* Much has been said of late concerning the probability of the genuine species of the cinchona tree becoming extinct; in consequence of which some succedaneum has been anxiously sought for; the bark of the broad-leaved willow, *Salix Caprea*, has been proposed for this purpose. Vogel recommends the root of *Geum urbanum avens;* others propose that of the *Dastisca canabina*.

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* It was under this form that the celebrated empiric Talbor, used to administer it in the paroxysms of Intermittents, and so successful was his practice, that Louis XIV. was induced to purchase at a large price the secret of his specific; and Charles the Second very unjustly protected him against the power of the College, and appointed him one of his physicians.

The *Cinchona Caribæa* of the Edinburgh Pharmacopœia is said, by Dr. Wright, to whom we are indebted for our knowledge of it, to have satisfactorily answered in all cases where the Peruvian bark was indicated. The *Geoffræa Intermis* is often sold for it.

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* Mr. Thomson has suggested the probability of this circumstance having arisen from the admixture of a species of bark, lately introduced into Europe from Martinique, resembling the *Cinchona Floribunda*, and which, by an analysis of M. Cadet, was found to contain iron." (*London Disp. Edit. 3. p. 247.*)

M. Ré, Professor of the Materia Medica at the Veterinary School at Turin, has annouced that the *Lycopus Europæus* of Linnæus, called by the peasants of Piedmont the *Herb China*, is a complete succedaneum for Peruvian Bark.* The success with which bark has been imitated by medicinal combination has already been noticed in the first volume of this work, p. 202.

CINNAMOMI CORTEX. L.E.D. (Laurus Cinnamomum.) *Cinnamon.*

All the qualities of cinnamon depend upon the presence of an *essential oil.* It is principally employed to cover the taste of nauseous medicines, and to correct the griping quality of different purgatives. It is, however, in itself, astringent and tonic, whence it has been found efficacious in the relief of alvine fluxes. ADULTERATIONS. It is sometimes intermixed with cinnamon from which the oil has been drawn; the fraud is detected by the weakness of the odour and taste of the specimen; sometimes it is mixed with *cassia*, but this is soon discovered, for cassia is thick and clumsy, breaks short, and smooth, and has a remarkably slimy taste, whereas the fracture of cinnamon is shivery, and its flavour warm and clean. Cinnamon ought not to leave a mawkish taste in the mouth; this circumstance denotes an inferior quality. There is an inferior kind imported into Europe from China, through the hands of private merchants; this is distinguished by being darker coloured, rougher, denser, and by breaking shorter; the taste is also harsher, more pungent, and ligneous, without the sweetness of Ceylon cinnamon. DOSE of the cinnamon in powder is from grs. x to ℈j. OFFICINAL PREP. *Aqua Cinnamomi,* L.E.D. *Spir. Cinnamomi,* L.E.D. *Tinct. Cinnamomi,* L.E.D. *Tinct. Cinnamom. co.* L. *Pulv. Cinnamom. comp.* L.E.

CINNAMOMI OLEUM. It is principally imported from Ceylon; it has a whitish yellow colour, a pungent burning taste, and the peculiar fine flavour of cinnamon in a very great degree. It should sink in water, and be entirely soluble in alcohol. It is one of the most powerful stimulants which we possess. Dose, ♏i to iij, on a lump of sugar.

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* This plant is found in abundance in Piedmont, principally in the marshes, where of course it is most needed. Nature is very kind in this respect, for the particular situation which engenders endemic diseases, is generally congenial to the growth of the plants that operate as antidotes to them.

COCCUS. L.E. (Coccus Cacti.) Coccinella. D.
Cochineal.

It is an insect imported from Mexico and New Spain, and has the appearance of a wrinkled berry or seed of a deep mulberry colour, with a white powder between the wrinkles. Uses. Its medicinal virtues are now entirely discredited, and it is only employed for the sake of its colouring matter, for the purpose of a dye; it was known to the Phœnicians, and was the *tolu* of the Jews. Its watery solution is of a violet crimson, its alcoholic of a deep crimson, and its alkaline of a purple hue; the colour of the watery infusion is brightened by acids, cream of tartar, and alum, and at the same time partly precipitated. Dr. John has given the name of *Cochenelin* to this colouring principle, which M. M. Pelletier and Caventou have lately obtained in a perfectly pure state, as a very brilliant purple red powder with a granular crystalline appearance; these chemists propose to call it *Carmine*, but as Mr. Children very justly observes, if we adopt the term, its termination should be altered, to avoid confounding the pure colouring matter with the pigment in common use. It may be called *Carmina*, a more harmonious name than Cochenelin, (Ann: de Chimie, vol. viii.) Incompatible Substances. The colouring matter is decomposed by *sulphate of iron*, *sulphate of zinc*, and *acetate of lead*. Officinal Prep: *Tinct: Cardamom: comp:* L.D. *Tinct: Cinchon: comp:* L.D. *Tinct: Gentian, comp:* E. *Tinct: Cantharid:* D. Adulterations. It is invariably adulterated with pieces of dough, formed in moulds, and coloured with cochineal. I understand that this fraud gives employment to a very considerable number of women and children in this metropolis. A cargo of the counterfeit article was some time since exported, in order to obtain the drawback; by throwing a suspected sample into water, we shall dissolve the spurious ones, and ascertain the extent of the adulteration.

COLCHICI RADIX. L.E.D.
Colchicum Autumnale.
The *Bulb* of the Meadow Saffron.

Qualities. When recent it has scarcely any *odour*, but its *taste* is bitter, hot, and acrid. Chemical Composition. Its properties reside in a milky juice, and depend upon an alkaline principle; it contains also gum, starch, inulin, and extractive matter, which, when in solution, undergoes a chemical change, analogous, I apprehend, to that which takes place in the infusion of Senna, and it would appear with similar inconvenience. Sir Everard Home ascertained that this deposite, in the vinous infusion, excites nausea and griping, but that it may be removed without destroying the efficacy of the medicine. The alkaline element, similar to that of the Hellebore (*Veratria*,) lately found in it, appears to exist in combination with gallic acid. (*Annales de Chimie*, *tom.* xiv. *Mai*, 1820.) This alkaline body would seem to display its greatest energies by its action upon mucous surfaces; in small portions it excites violent sneezing, and when applied to the membrane of the stomach, immediate vomiting and purging are the result. See *Veratri radix*. The virtues of the bulb of Colchicum are very variable, according to the place of growth and season of the year. Since the third edition of this work, I have been favoured with some valuable observations upon this subject by Mr. Alexander Gordon; he says that it is in its greatest perfection from the beginning of June until the middle of August.[*] It is also necessary to extract the virtues of the bulb as soon as it is gathered, for although removed from the earth, the developing process of vegetation continues, and the substance undergoes a corresponding series of chemical changes, and finally becomes as inert as if it had remained in the ground. It is a problem of some importance to discover a method of destroying the vegetable life of the bulb, without, at the same time, injuring its virtues, for I apprehend that a want of attention to the above precaution frequently renders the vinous infusion inactive. The practitioner engaged in preparing this vegetable remedy will find some valuable directions in the third edition of Thomson's Dispensatory. The flower of the *meadow saffron* is very poisonous to cattle. Solubility. Vinegar and wine[†] are the best menstrua for extracting its active qualities;

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[*] With this opinion Mr. A. T. Thomson coincides, for in the 3d edition of his Dispensatory, he says, "the thick old bulb begins to decay after the flower is perfectly expanded, and the new bulbs, of which there are always two formed on each old bulb, are perfected in the following June; from which time until the middle of August, they may be taken up for medicinal use

[†] Eau Medicinale De Husson. After various attempts to discover the active ingredient of this Parisian remedy, it is at length determined to be the *colchicum autumnale*, which several ancient authors, under the name of *hermodactyllus*, have recommended in the cure of gout, as stated in the historical preface to this work, vol. i. p. 50. The following is the receipt for preparing this medicine. Take two ounces of the root of *colchicum*, cut it into slices, macerate in four fluid ounces of Spanish white wine, and filter.

Dr. Wilson's Tincture for the Gout. This is merely an infusion of by decoction its essential oil is dissipated. Medicinal Uses. It has been much extolled on the continent as a remedy in dropsy, especially in hydrothorax, and in humoral asthma; its operation however as a diuretic, is less certain than squill, although its *modus operandi* is analogous to it, as will be seen by referring to our new arrangement of Diuretic remedies, vol. i. p. 123. As a *specific* in gout its efficacy has been fully ascertained; it allays pain, and cuts short the paroxysm. It has also a decided action upon the arterial system, which it would appear to control through the medium of the nerves. Incompatible Substances. In my opinion, acids, and all oxygenated substances render the vinous infusion drastic; on the contrary, alkalies render its principles more soluble, and its operation more mild, but not less efficacious. Magnesia may judiciously accompany its exhibition. Dose of the saturated vinous infusion, the only form in which its successful operation can be ensured, f℥ss to f℥j, whenever the patient is in pain. See *Vinum Colchici*. Officinal Prep. *Acetum Colchici*. L. *Oxymel Colchici*, D. *Syrupus Colchici Autumnalis*, E.

Colchici Semina. Dr. Williams of Ipswich has lately published an account of the efficacy of the *Seeds* of Colchicum, which he says possess all the virtues of the root, without its pernicious qualities; the form in which he administers them, is in that of a vinous infusion.* He also informs me that he has experienced considerable tonic effects from these seeds; and that unlike other narcotic remedies they do not appear to produce, or favour congestion in the head. The seeds ought not to be bruised, as their virtues reside chiefly in the husk, or cortical part.

COLOCYNTHIDIS PULPA. L.E.D.

(Cucumis Colocynthis.)

Colocynth. Coloquintida. *Bitter Cucumber.*

Qualities. The medullary part of this fruit, which is alone made use of, is a light, white, spongy body. *Taste*, intensely bitter and nauseous. *Odour*, when dry, none. Chemical

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colchicum, as Dr. Williams of Ipswich has satisfactorily shown. Since the discovery of colchicum being the active ingredient of the *eau medicinale*, numerous empirical remedies have started up, containing the principles of the plant in different forms.

The expressed juice of the colchicum is used in Alsace to destroy vermin in the hair: it is very acrid, and excoriates the parts to which it is applied.

* This preparation, or the Seeds, may be procured for trial, from the house of Savory, Moore, and Davidson, of New Bond Street.

Composition. Mucilage, resin, a bitter principle, and some gallic acid. **Solubility.** Alcohol and water alike extract its virtues, but the active principle resides both in the portion soluble in water, and in that which is insoluble. **Medicinal Uses.** It is a very powerful drastic cathartic, and was employed by the ancients in dropsical and lethargic diseases. Many attempts have been made to mitigate its violence, which is best effected by triturating it with gummy farinaceous substances, or the oily seeds; the watery decoction or infusion is much less severe, and has been recommended in worm cases, but it is rarely employed, except in combination with other purgatives. Thunberg informs us, (*see his Travels, vol.* ii. *p.* 171) that this article is rendered so perfectly mild at the Cape of Good Hope by being pickled, that it is absolutely used as food both by the natives and colonists. Mixed with paste or other cements, it is used to keep away insects, which it does by its extreme bitterness. **Dose,** grs. iv to x. **Incompatible Substances.** The infusion is disturbed by *sub-acetate,* and *acetate of lead; nitrate of silver; sulphate of iron,* and by the *fixed alkalies.* **Officinal Prep.** *Extract Colocynth.* L. *Extract. Colocynth. comp.* L.D. *Pil. Aloes cum Colocynth* ([illegible]) D.E. When the fruit is larger than a St. Michael's orange, and has black, acute pointed seeds, it is not good.

CONFECTIONES. L. *Confections.*

Under this title the London College comprehends the *conserves* and *electuaries* of its former Pharmacopœia, and of the present Edinburgh and Dublin Pharmacopœias; but in strict propriety, and for practical convenience, the distinction between *conserves* and *electuaries* ought to have been maintained. Saccharine matter enters into each of these compositions, but in different proportions, and for different objects. In conserves it is intended to preserve the virtues of recent vegetables; in electuaries, to impart convenience of form. See *Electuaria.*

Confectio Amygdalarum. L. This preparation affords an expeditious mode of preparing the almond emulsion; it should be used in the proportion of a drachm to each fluid ounce of distilled water.

Confectio Aromatica. L. *Electuarium Aromaticum.* E.D. This is a very useful combination of various aromatics, to which the London and Dublin colleges have added a *carbonate of lime;* this circumstance makes the preparation a judicious constituent for the exhibition of active salts, liable to be invalidated by the presence of acid in the stomach, but, at the same time, it renders it incompatible with *acids*, *antimonial wine*, &c. These observations do not of course extend to the *aromatic electuary* of the Edinburgh pharmacopœia. See *Form*: 15, 42, 49, 125, 126.

Confectio Cassiæ. L. The ingredients of this confection are manna, tamarind pulp, and syrup of roses. It is gently laxative, and from its agreeable flavour is well calculated for children. The pharmaceutist, in preparing it, must take care that he does not substitute the syrup of the *red*, for that of the *damask* rose; a substitution, as stated under the head of Syrupi, not very unusual. The confection does not ferment or become acescent.

Confectio Opii. L. *Electuarium Opiatum*. E. This is a combination of aromatics with opium, intended as a substitute for the *Mithridate* and *Theriaca* of the old pharmacopœias. It is highly useful in flatulent cholic and diarrhœa, and in all cases where a stimulant narcotic is indicated. One grain of opium is contained in grs. 36 of the London, and in grs. 43 of the Edinburgh preparation.

Confectio Rosæ Caninæ, olim *Conserva Cynosbati*. Its acidity depends upon uncombined citric acid, a circumstance which it is essential to remember when we direct its use in combination. The hip, or fruit of this plant, beat up with sugar, and mixed with wine, is a very acceptable treat in the north of Europe.

Confectio Rosæ Gallicæ. *Confection of the Red Rose*. Principally used as a vehicle for more active medicines. It is sometimes brightened by the addition of a small proportion of sulphuric acid; this is a circumstance of great importance, where the confection is used for making the mercurial pill. See *Pilulæ Hydrarg*. It is a very common excipient for pills, see *Form*: 21, 59, 66, 73, 122, 160, 170.

Confectio Scammoneæ. L.D. Scammony, *two parts*, powdered cloves and ginger, of each, *one part*, to which are added a small portion of oil of carraway, and of syrup of roses, q. s. It is a stimulating cathartic, and may be given in the dose of ʒss to ʒj.

Confectio Sennæ. L.E.D. olim *Electuarium Lenitivum*. The ingredients of this preparation are senna leaves, figs, tamarind pulp, cassia pulp, the pulp of prunes, coriander seeds, liquorice root, and refined sugar. It is gently laxative, and is an excellent vehicle for the exhibition of more powerful cathartics. (*Form*. 74, 93. When properly made, it is an elegant preparation, not apt to ferment, nor to become ascescent: the directions of the pharmacopœia are however rarely followed. Jalap blackened with walnut liquor, is frequently substituted for the more expensive article cassia; and the great bulk of it, sold in London, is little else than prunes, figs, and jalap. I understand that a considerable quantity is also manufactered in Staffordshire, into which unsound and spoilt apples enter as a principal ingredient. The preparation sold at Apothecaries' Hall is certainly unique in excellence. Dose, ʒij or more.

The above are the principal confections which are employed in modern practice, for happily the shops are at length disencumbered of those nauseous insignificant conserves, unknown to the ancients, but which were ushered into use by the Arabian physicians, and which continued for so many years to disgrace our dispensatories and to embarrass our practice. The French, in their new Codex Medicamentarius, have limited their electuaries to a number not exceeding nine; they have however made up in complexity for deficiency in number; the *Electuarium de croco*, which is intended to answer the same ends as our confectio aromatica, has no less than twelve ingredients, although the force of the combination depends entirely upon carbonate of lime, cinnamon, and saffron; and so it is with the rest.

CONII FOLIA. L.E. Conium Maculatum.
Cicuta. D. *Hemlock.*

Qualities. The leaves, when properly dried, have a strong and narcotic odour, and a slightly bitter and nauseous taste: the fresh leaves contain not only the narcotic, but also the acrid principle: by exsiccation, the latter is nearly lost, but the former undergoes no change; the medicinal properties of the leaves are therefore improved by the operation of drying. **Chemical Composition.** The medicinal activity of the plant resides in a resinous element, which may be obtained in an insulated form, by evaporating an ethereal tincture made with the leaves, on the surface of water; it has a rich dark green colour, and contains the peculiar odour and taste of hemlock in perfection; a dose of half a grain will produce vertigo and headach. It may be distinguished by the name of *Conein*. The watery extract of this plant can therefore possess but little power, a fact which Orfila has fully established by experiment. No part of the plant is entirely destitute of efficacy, though the leaves possess the most activity. **Solubility.** Alcohol and ether extract its virtues. **Incompatible Substances.** Its energies are greatly diminished by vegetable acids; hence vinegar is its best antidote. Medical Uses. It is a powerful sedative, and has been deservedly commended for its powers in allaying morbid irritability: according to my own experience, it is, in well-directed doses, by far the most efficacious of all palliatives, for quieting pulmonary irritation. It has been extolled also in the cure of scirrhus and cancer, and it will without doubt prove in such cases a valuable resource, from its sedative influence. Externally, it will afford considerable relief to irritable ulcers, when applied in the form of fomentation or cataplasm, see *Form.* 17, 18. Forms of Exhibition. The dried leaves, powdered, and made into pills, (*Form.* 2, 17, 18.) The powder ought to have a fine lively green colour. Dose, gr. iij, gradually increased, until some effect is produced. Several different plants have been mistaken for, and employed in the place of hemlock, such as *Cicutu Virosa*, (the water hemlock,) *Æthusa Cynapium*, *Caucalis anthriscus*, and several species of *Chærophyllum*. Officinal Prep. *Extract. Conii.* L.E.D.

CONTRAJERVÆ RADIX. L.E.

(Dorstenia Contrajerva, Radix.) *Contrajerva Root.*

The qualities of this plant are alike extracted by spirit and water; the watery decoction, however, is very mucilaginous; as it contains no astringent matter, the salts of iron do not affect it. Dose of the powdered root gr. v to ʒss, but it is rarely used. It is considered cordial and diaphoretic. Has it any virtues? The Spanish Indians have long used it as an antidote to poisons; the Spanish word *Contrahiérba* signifies antidote. Officinal Prep. *Pulv. Contrajerv. co.* L.

COPAIBA. L.E. (Copaifera Officinalis.)

Balsamum Copaibæ. D.

Copaiba, *Copaiva*, or *Capivi Balsam.*

Qualities. *Consistence*, that of oil, or a little thicker. *Colour*, pale golden yellow. *Odour*, fragrant and peculiar. *Taste*, aromatic, bitter, and sharp. *Spec. Grav.* 0·950. Chemical Composition. It is improperly denominated a balsam, for it contains no benzoic acid, but consists of resin and essential oil. Solubility. It is insoluble in water, but soluble in ten parts of alcohol, and in expressed and essential oils; with the pure alkalies it forms white saponaceous compounds which are soluble in water, forming opaque emulsions. Medical

Uses. Stimulant, diuretic, and laxative; it seems to act more powerfully on the urinary passages than any of the other resinous fluids, hence its use in gleets and in fluor albus. Its use gives the urine an intensely bitter taste, but not a violent smell, as the turpentines do. By referring to the Synoptical arrangement of Diuretic remedies,(vol. i. p. 123,) it will appear that *Copaiba* is referred to Class 1, 1. *b*. for there is reason to believe that its active principle undergoes absorption, and by coming into contact with the urinary organs, produces the medicinal effects for which it is so highly valued. Forms of Exhibition. Diffused in soft or distilled water by yolk of egg, or by twice its weight of mucilage, f ʒss to every f℥j of water, forms an elegant mixture, or it may be given dropped on sugar, and in this latter form it is certainly more disposed to act on the urinary organs, than when exhibited in that of an emulsion. (*Form*. 156.) Adulterations. A considerable quantity sold in London is entirely *factitious*. A curious trial took place some time since, between the owner of certain premises that were burnt down, and the Governors of the Sun Fire Office, in consequence of the latter refusing to indemnify the proprietor for his loss, because the fire had been occasioned by his *making* Balsam of Copaiba. This article is also adulterated with mastiche and oil; M. Bucholz asserts that if it does not dissolve in a mixture of four parts of pure alcohol, and one of rectified ether, we may infer its adulteration; *rape oil* is also frequently mixed with it, in which case if dropped into water, the drops will not retain their spherical form, as they invariably will, if pure.

[COPTIS TRIFOLIA. *Salisbury*.

HELLEBORUS TRIFOLIUS. *Linn*.

Bw.I. 60. *Bn*. II. 97. *Radix*.

Gold Thread. Mouth-weed. The Root.

Specific Character. Scape one flowered: leaves ternate, two or three inches high, roots long, filliform, golden yellow, perennial. Grows abundantly in wet land in most parts of the United States: flowers in May and June. *Taste*, intensely bitter, but not astringent. Solubility. Alcohol and water extract its bitter principle, but alcohol most perfectly. Medical Use. It has long been a very popular domestic remedy for aphthous ulcers of the mouth and throat, and were it not for the testimony of Professor Bigelow, who appears to have investigated whatever relates to this article with minute attention, and who thinks it undeserving of this reputation, I should believe the evidence in support of it, sufficient to justify the character which popular opinion has given to it. Personal observation does not enable me to say any thing of its efficacy in this disease, but it certainly possesses merit as a tonic. It is not much inferior to, nor unlike Gentian. **Medicinal Preparations.** The most useful are, the tincture, prepared by digesting ʒj of the roots in Oj of diluted alcohol, and the decoction of the same quantity of the roots in Oj of water. **Doses.** ʒj of the tincture, ℥j of the decoction.—I.]

CORNUA. L.E.D. Cervus Elaphus.

Stag's, or *Hart's Horn.*

The horns of the stag differ only from bone, in containing less of the phosphate of lime, and a larger proportion of gelatine; by boiling, they yield a clear, transparent, and flavourless jelly, in quantity about one fourth of the weight of the shavings employed; to obtain which we should boil ʒiv in in f℥vij of water, until reduced to fʒvj. **Adulterations.** This article is often sophisticated with the shavings of mutton bone; the fraud is detected by their greater degree of brittleness. They were formerly so much used for the preparation of ammonia, that the alkali was commonly called *Salt* or *Spirit of Hartshorn.*

[CORNUS. *Tetrandria Monogynia*. Linn.

There are three species of this genus introduced into the American Pharmacopœia, each of which possesses valuable medicinal qualities.*

CORNUS CIRCINATA. *W. I.* 663. *Cortex.*

Mountain Willow. White rind, or Round-leaved Dogwood.
The Bark.

Specific Character. Branches warty; leaves broad-oval, accuminate, white-downy beneath. Cyme much spread; about eight feet high. Berries blue. History. This species of the Cornus is found on the banks of rivers, and on the sides of hills and mountains, from Canada to Virginia. In the American Pharmacopœia, it is introduced into the secondary list, from which it may be inferred that it was thought to possess less merit than the Cornus Florida, which is placed in the primary catalogue. Since the publication of that work, the *circinata* has been more extensively used. The high estimation with which it was regarded by Professor Ives of New Haven, and by a few other respectable physicians, who were also practically acquainted with its virtues, induced me to commence the use of it as early as the year 1819, and the result of my inquiries were published in 1821, in the New-York Medical Repository.* Although subsequent observation has in some measure modified my opinion relative to the precise nature of its medicinal virtues, it has increased rather than diminished my confidence in its remedial efficacy. The following is a brief abstract of the paper above alluded to, with such additional information as has been furnished by further experience. Sensible Properties. *Taste*, bitter, astringent and aromatic; *Colour*, whitish, or ash-coloured; and from the smallness of the branches of the shrub, the bark when dry resembles in its quilled appearance, as also in colour, the pale Peruvian bark; (*Cinchona lancifolia*) when pulverized, it resembles ipecac. Chemical Composition. Large proportions of tannin and gallic acid, extractive and bitter principle, resin, gum-resin, and essential or aromatic oil. Solubility. It yields almost entirely its medicinal virtues by infusing in boiling water; for the resin and gum resin exist in inconsiderable proportions, and the volatile aroma is soluble in water and only dissipated by decoction. Alcohol and proof spirits partially extract its active properties, but water is the best, and the only necessary menstruum. Half an ounce of this bark yields by *boiling* in water, and evaporating in a sand bath seventy-four grains of an astringent and intensely bitter extract. *Infused* in boiling water and evaporated, the same quantity of bark yields sixty-two grains of extract which is more aromatic and less unpleasant to the taste. Medical Use. The medicinal character of the *circinata* is perhaps more like that of the Cinchona cordifolia than of any other article; but it differs from it in possessing more astringency and aroma. It is not only more astringent, but is a better tonic than the Columbo. In whatever form it may be administered, it seldom, if ever, disagrees with the stomach. I have prescribed it in various diseases as a tonic, but its peculiar excellence is in affections of the stomach and bowels, depending on, or connected with, a relaxed state of the mucous membrane. In chronic diarrhœa it is more uniformly efficacious than any remedy in common use. Those who have used it most, so far as I have been able to learn, have most confidence in its remedial powers, and it is believed that with the exception of one or two articles, no plant indigenous to this country would add so much to the value of our Materia Medica as this, if it were introduced into general use. From the foregoing remarks it will readily be inferred that it is forbidden in diseases accompanied with febrile excitement, and that in most instances it should be preceded by evacuants. During the last year a considerable quantity of this bark has been pulverized by Dr. Sandford of Connecticut, in his manufactory, so justly celebrated for grinding Peruvian bark. MEDICINAL PREPARATIONS and DOSES. It may be administered in substance; in doses of ʒj to ʒij, in infusion; prepared by pouring a pint of boiling water to ℥j of the bark coarsely powdered, which is perhaps the most eligible preparation, and in decoction; prepared with the same proportions. DOSE, from ℥j to ℥ij. In obstinate diarrhœa accompanied with dyspeptic stomach and dry skin, ʒj of this bark combined with gr. ii to ʒiij of Ipecac. and given pro re nata will be found an excellent prescription.

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* There are not less than ten or twelve species belonging to the family of Dog-wood, and it is probable they all possess similar medicinal properties. The *C. Paniculata*, or *bush dog-wood*, I am credibly informed, has recently been used to a considerable extent, and promises to be not inferior to the species that are in more general use.—I.

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* *Description, Analytical examination and Medical History of the* Cornus Circinata, *or Mountain Willow. Med. Rep. vol. 22d. Page* 116.

CORNUS FLORIDA.

W. I. 661. *Bw.* II. 73. *Bn.* I. 44. *Cortex.*
Dog-wood Tree. New England box-wood. The Bark.

SPECIFIC CHARACTER. Leaves ovate, acuminate, involucres four, very large, somewhat obcordate, and appear like petals: fruit ovate, berries red, involucres white, very showy, but the corals are obscure. DESCRIPTION. An ornamental tree growing abundantly throughout the United States: it rises to the height of fifteen or twenty feet; flowers in May and June; its berries ripen in September. QUALITIES. The bark of this tree is of a dark brown colour, possesses but little odour, to the taste is bitter, astringent, and in a small degree pungent and aromatic. CHEMICAL COMPOSITION.* Tannin, gallic acid, resin, gum-resin, bitter extractive and mucilage. Medical Properties. It has long been regarded as a tonic, very closely allied in its character to the Peruvian bark, and has been extensively and pretty successfully prescribed for the cure of intermittent fevers; it is however much more stimulating than the cinchona, and is not so uniformly efficacious. It has an intermediate relation to the cinchona, and the *Cortex liriordendron*, or bark of the tulip tree. In the treatment of vernal intermittents of this climate, which frequently commence with a remitting type, and require free depletion, preliminary to the use of tonics, Peruvian bark may be advantageously given when that of the Cornus would be injurious: but when this disease is decidedly of an asthenic diathesis, unaccompanied with local inflammation; and in the protracted stage of typhus, where stimulants in combination with tonics are required, the latter is probably preferable to the former. Solubility. Its most active and valuable properties are soluble in water, but these are also partially dissolved, together with the resin, by proof spirit. In these respects, it does not differ materially from the Peruvian bark, but as the Cornus is the most stimulating of the two, and the resin, the most stimulating of *its* proximate principles, without itself adding to the tonic virtues of the bitter extractive, it is reasonable to suppose that water is the proper menstruum for this bark when used as a substitute for cinchona. Most writers on this article agree that it is improved by keeping at least one year. The fresh bark frequently disagrees with the stomach and bowels. When collected in the spring of the year, and dried and preserved in a proper manner, it is but little inferior in strength to the yellow Peruvian bark—its Medicinal Preparations are the same. The extract, in doses of gr.v. to gr.xv. is thought to be one of the most eligible modes of its exhibition.

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* This substance was made the subject of an inaugural thesis, and first analyzed in 1803, by Dr. John M. Walker. I have since repeated most of his chemical experiments and am satisfied of the general accuracy of his conclusions.

CORNUS SERICIA.

W. I. 663. *Bn.* I. 115. *Cortex.*

Swamp Dog-wood. Red willow. The Bark.

Specific Character. Branches spreading; branchlets woolly: leaves ovate, acuminate, rusty—pubescent beneath: cymes depressed, woolly. About seven feet high; flowers in June and July; berries bright blue. Is found from Canada to Georgia, growing in swamps and on the borders of rivers and creeks. The chemical and medicinal qualities of the Cornus Florida and Sericia were found from the investigations of Dr. Walker to be essentially the same, and succeeding writers, particularly Dr. W. P. C. Barton, and Dr. Bigelow, have corroborated his conclusions. Dr. Bigelow says,* "the genus *Cornus* in the northern hemisphere, like cinchona in the southern, appears to have the same medical character pervading all its species, differing only in degree." This remark in a general sense is undoubtedly correct, but it is too general for a practical aphorism. The *Sericia* is less bitter, more astringent, and more pleasant to the taste than the *Florida*, and on the whole resembles it less than it does the *Circinata*. Although they are all tonic and astringent, and under some circumstances either of them may be administered with equal success, still, from the more stimulant properties of the Florida, it would be objectionable in some cases in which the other species would be beneficial. The former is the only species admitted into the primary list in the American Pharmacopœia, and the one to which the attention of writers has been, probably by accident, most directed; but so far from meriting this pre-eminence, it is questionable whether it is as valuable as either of the other species. Our country abounds with vegetables, possessing bitter and tonic properties, so combined as to be very near allied in their medicinal character to the *Cornus Florida*; but, the properties of the *Circinata* are peculiar and specific, and when more generally known, it is confidently believed, will be regarded as an indispensable article of the Materia Medica.—I.]

CRETA PRÆPARATA. L.D.

Carbonas Calcis Preparatus. E. *Prepared Chalk.*

This is common chalk, the coarser particles of which have been removed by the mechanical operation of washing. It consists of carbonate of lime, with various earthy impurities. The Dublin Pharmacopœia directs a chemical process for obtaining a perfectly pure carbonate, (*Creta Præcipitata,*) but it appears to be an unnecessary refinement. Medical Uses. It is antacid and absorbent, on which account it is useful in acidities of the primæ viæ, and in diarrhœas, after removing all irritating matters by previous evacuation. (*Form.* 52.) From its absorbent properties, it is a good external application to ulcers discharging a thin ichorous matter. Dose, grs. x to ℈ij. or more. It is almost unnecessary to state that it must not be combined with acidulous salts; I have however seen a formula for a powder, intended as an astringent, in which chalk and alum entered as ingredients. Officinal Prep. *Hydrargyrum cum creta.* L. *Pulvis cretæ comp.* L.E. *Pulv. Opiatus.* (𝕱) E. *Mist. Cretæ.* L.E. *Trochisci Carbonatis Calcis.* E. *Confectio Aromatica.* (𝕮) L.E.

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* Treatise on the Materia Medica, Page 148.

CROCI STIGMATA. L.E.

(Crocus Sativus.)

Crocus. D. *Saffron.*

Qualities. *Form*, cakes, consisting of the stigmata of the flower, closely pressed together. *Odour*, sweet, penetrating, and diffusive. *Taste*, warm and bitterish. *Colour*, a rich and deep orange red. Chemical Composition. One hundred parts consist of sixty-two of extractive, the remaining parts are chiefly ligneous fibre, with small portions of resin and essential oil. Bouillon Lagrange and Vogel have examined this extractive matter very accurately, and from the circumstance of its watery infusion assuming different colours when treated with different agents, they have named it *polychroite.* Thus chlorine and light destroy its colour, sulphuric acid changes it to indigo which gradually becomes lilac, and nitric acid gives it a green hue. Solubility. It yields its colour and active ingredients to water, alcohol, proof spirit, wine, vinegar, and in a less degree to æther; the watery infusion and the vinous tincture soon grow sour, and lose their properties, and the solution in vinegar becomes quickly colourless. Med. Uses. It is now never employed but for the sake of its colour or aromatic flavour, as an adjunct to other substances. It is much used in foreign cookery to colour rice, &c. Officinal Prep. *Syrup. Croci.* L. *Tinct. Croci sativi.* E. *Confect. Aromat.* L.D. (𝕮) *Pil. Aloes cum Myrrha.* L. (𝕲.) *Tinct. Aloes comp.* (𝕮) L.E.D. *Tinct. Cinchonæ comp.* L.D. *Tinct. Rhei.* L. (𝕮) *Tinct. Rhei comp.* L. (𝕮.) Adulterations. It is not unfrequently sophisticated with the fibres of smoked beef, or the petals of flowers, especially of the marigold (*Calendula Officinalis,*) and of the safflower, (*Carthamus Tinctorius.*) The former of these fraudulent ingredients is indicated by the unpleasant odour which arises when the saffron is thrown upon live coals; the latter, by infusing the specimen in hot water, when the expanded stigmata may be easily distinguished from the other petals of substituted flowers. A deficiency of colour and odour in the infusion indicates that a tincture or infusion has already been drawn from the saffron, and that it has been subsequently pressed again into a cake. In the market is to be found saffron from Sicily, France, and Spain, besides the English; that which is imported from Spain is generally spoiled with oil, in which it is dipped with the intention of preserving it. The cake saffron sold in some of the less respectable shops, consists of one part of saffron and nine of marigold, made into a cake with oil, and then pressed; it is sold in considerable quantities for the use of birds, when in moult.

CUBEBÆ.* (Piper Cubeba.)

Cubebs, or *Java Pepper*.

This Indian spice, a native of Java, formerly held a place in our materia medica, and entered into the composition of *mithridate* and *theriaca*, but being inferior in pungency and aromatic warmth to pepper, it fell into disuse. Lately, however, it has been ushered into surgical practice for the cure of gonorrhœa, with all the extravagance of praise which usually attends the revival of an old, or the introduction of a new medicine.† It has been pronounced to be a specific in this complaint, if taken in the early stages, in the dose of a desert spoonful three times a day, in a sufficient quantity of water. The Indians have been long acquainted with the influence which cubebs exerts upon these organs; thus Garcias, "*Apud Indos cubebarum in vino maceratarum est usus ad excitandam venerem.*" CHEMICAL COMPOSITION. M. Vauquelin has lately made a very accurate analysis of this pepper, from which its composition may be stated as follows: 1. A volatile oil, which is nearly solid.—2. A resin, *resembling Balsam of Copaiba*.—3. Another and coloured resin.—4. A coloured gummy matter.—5. An extractive principle, similar to that which is found in leguminous plants.—6. Some saline substances. He considers the resin *resembling the Copaiba*, to be the peculiar matter in which that property resides, which imparts to it the power of curing gonorrhœa. As the qualities of this spice do not reside in volatile elements, an extract made with rectified spirit will be found to possess the whole of its virtues. The French, in their new *Codex Medicamentarius*, have introduced the cubebs into their list of materia medica. ADULTERATIONS. The "Turkey Yellow Berries," i. e. the dried fruit of the *Rhamnus Catharticus*, are often substituted for the Cubebs, and the similarity between them is so great, that the casual observer may be easily deceived.

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* Cūbĕba—Indis *Cubab;* Avicennæ Kebâba. It makes short the penultima, because Actuarius, and other modern Greeks call it [illegible], [illegible], and κομβεβα.

† See "Practical Observations on the use of the Cubeba, in the cure of Gonorrhœa," by H. JEFFREYS. Esq.

CUPRI SULPHAS. L.E.D. Sulphate of Copper.
vulgo *Blue Vitriol. Blue Copperas.*

QUALITIES. *Form*, crystals, which are rhomboidal prisms. *Colour*, a deep rich blue. *Taste*, harsh, acrid, and styptic; they slightly effloresce; when treated with sulphuric acid, no effervescence occurs, a circumstance which at once distinguishes this salt from *Œrugo*. CHEMICAL COMPOSITION. According to the latest experiments, it is an *oxy-sulphate*, consisting of one proportional of peroxide with two proportionals of sulphuric acid, and when crystallized, it contains ten proportionals of water; its beautiful colour depends on this last ingredient. SOLUBILITY. It is soluble in four parts of water at 60, and in less than two at 212°; the solution shows an excess of acid by reddening litmus. In alcohol it is insoluble. INCOMPATIBLE SUBSTANCES. *Alkalies and their carbonates; subborate of soda; acetate of ammonia; tartrate of potass; muriate of lime; nitrate of silver; sub-acetate, and acetate of lead; oxy-muriate of mercury; all astringent vegetable infusions and tinctures.* Iron immersed in the solution, precipitates copper in a metallic form; hence the exhibition of the filings of iron has been proposed as an antidote.* MEDICAL

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* It may be here observed, that Copper, in its metallic form, exerts no action upon the system. A most striking instance of this fact occurred during my hospital practice, in the case of a young woman who swallowed six copper penny pieces with a view of destroying herself; she was attended by Dr. Maton and myself in the Westminster Hospital for two years, for a disease which we considered visceral, but which was evidently the effect of *mechanical* obstruction, occasioned by the coin. After a lapse of five years she voided them, and then confessed the cause of her protracted disease, during the whole course of which no symptom arose which could in any way be attributed to the poisonous influence of copper. Dr. Baillie, in his morbid anatomy, relates a case, in which five halfpence had been lodged in a pouch in the stomach, for a considerable time, without occasioning any irritation; and Theodore Gardelle, after his conviction for the murder of Mrs. King, in Leicester Square, swallowed a number of halfpence, for the purpose of destroying himself, but without producing any ill effects. Mr. A. T. Thomson relates also two cases of halfpence being swallowed by children, in one of which the copper coin remained six months in the intestines, and in the other two months. The filings of copper were formerly a favourite remedy in rheumatism, a drachm of which has been taken with impunity for a dose. It appears therefore that metallic copper does not undergo any change in the digestive organs by which it is converted into a poison, notwithstanding the presence of substances, which,

Uses. It is emetic from grs. ij to xv. tonic gr. ¼; it is, however, but rarely used internally except as an emetic, externally it is employed as an escharotic; and, in solution, as a stimulant to foul obstinate ulcers.* In the proportion of half a drachm to eight ounces of rose water it forms a lotion which has been found very efficacious in phagedenic ulcers of the face, and in allaying itching when attended with erysipelatous inflammation about the anus and labia pudendi. It is also a styptic when applied in solution. **Officinal Prep.** *Solut. Cupri Sulphat. com.* E. *Cuprum Ammoniatum* (§) L.E.D. (*Form.* 68.)

CUMINI† SEMINA. L. Cumin Seeds.

Qualities. *Odour*, strong, heavy, and peculiar; *Taste*, bitterish and warm. **Chemical Composition.** Gum, resin, and a yellow pungent oil, upon which the peculiar properties of the seeds depend. **Solubility.** Water does not extract

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out of the body, would at once render it destructive, as we have too many cases to show, from the careless use of copper utensils in cookery. It is, however, a very important fact, that copper cannot be dissolved while tin is coexistent in the mixture, hence the great use of tinning copper utensils; and farther, it is asserted that untinned coppers are less liable to be injurious when pewter spoons are used for stirring, than when silver ones are employed for that purpose; the explanation of this fact is obvious. For the same reason, M. Proust has shown that the tinning of kitchen utensils, which consists of equal parts of tin and lead, cannot be dangerous from the presence of the latter metal, since it is sufficient that the lead should be combined with tin, in order to prevent it from being dissolved in any vegetable acid; for the tin being more oxidable than the lead, is exclusively dissolved, and prevents the second from being attacked. In short, the lead cannot appropriate to itself an atom of oxygen, but the tin would carry it off in an instant. *M. Guersent* therefore is wrong when, speaking of the tinning of copper vessels, he says, "it is a light veil, which conceals the danger, instead of being a true preservative, and that it only inspires a security often fatal."

[*] **Bates's Aqua Camphorata.**—Sulphate of copper is the base of this preparation, which was strongly recommended by Mr. Ware. The following was his recipe: ℞. *Cupri Sulph. Boli Gallic, a. a.* gr. xv. *Camphoræ* gr. iv. *solve in aq. fervent.* fℨ iv, *dilueque cum aquæ frigidæ* oiv *ut fiat Collyrium.*

[†] Cŭminum makes long the penultima, thus—

"Rugosum Piper et pallentis grana *Cumini*:"

Pers: Sat: v.

This line of the satirist also records an opinion which is worthy notice, that *Cumin* will make those who drink it, or wash themselves with it, or as some say, who smoke it, of a pale visage. This belief is mentioned by Dioscorides; and Pliny informs us that the disciples of Porcius Latro, a famous master of the art of speaking, were reported to have used *Cumin*, in order to imitate that paleness which their master had contracted by his studies; thus too Horace,

——————— Proh si
"Pallerem casu, biberent exsangue Cuminum."

Epist. 19. *Lib.* 1. *lin:* 18.

more than their odour, but alcohol dissolves all the principles in which their virtues reside, and leaves upon evaporation a powerful extract. **Med. Uses.** Carminative and stomachic; they are however but rarely used, except as an ingredient in plasters.

CUPRUM AMMONIATUM. L.D.

Ammoniaretum Cupri. E. *Ammoniated Copper.*

Qualities. *Form*, a violet coloured mass, which on exposure to air becomes green, and is probably converted into a carbonate. *Taste*, styptic and metalline. *Odour*, ammoniacal. **Chemical Composition.** It is a triple salt, a sub-sulphate of oxide of copper, and ammonia. The Edinburgh College is certainly incorrect in calling it an *ammoniuret*. **Solubility**, f℥j of water dissolves ℈j of this salt. **Med. Uses.** It is tonic, and antispasmodic. Dr. Cullen first proposed its exhibition in epilepsy, and it has frequently been employed with evident advantage in that disease. It has been also given in chorea, after a course of purgatives. **Forms of Exhibition.** It may be formed into pills with bread; to which an addition of sugar has been recommended to prevent them from becoming hard; but we must remember that recent experiments have shown that sugar has the power of counteracting the operation of copper. **Dose**, gr. ¼ cautiously increased to grs. v. twice a day. **Officinal Preparations.** *Liquor Cupri Ammoniati.* L.

CUSPARIÆ CORTEX. L. (Cusparia febrifuga.)

Bonplandiæ Trifoliatæ Cortex. E.

Angustura, Cortex. D.

Cusparia or Angustura Bark.

Qualities. *Form*, pieces covered with a whitish wrinkled thin epidermis; the inner surface is smooth, of a brownish yellow colour. *Odour*, not strong, but peculiar. *Taste*, bitter, slightly aromatic, and permanent. **Chemical Composition.** Cinchonia, resin, extractive, carbonate of ammonia, and essential oil. **Solubility.** Its active matter is taken up by cold and hot water, and is not injured by long decoction, but the addition of alcohol precipitates part of the extractive. Alcohol dissolves its bitter and aromatic parts, but proof spirit appears to be its most complete menstruum. **Incompatible Substances.** *Sulphate of Iron; Sulphate of Copper; Oxymuriate of Mercury; Nitrate of Silver; Tartarized Antimony; Sub-*

acetate, and Acetate of Lead; Potass; and perhaps the *Mineral Acids*, for they produce precipitates, as do also the *infusions of Galls* and *Yellow Cinchona*. MED. USES. Stimulant and tonic, it does not, like cinchona, oppress the stomach, but imparts a degree of warmth, expels flatus, and increases the appetite for food: with respect to its powers in the cure of intermittents, many doubts are entertained. FORMS OF EXHIBITION. In substance, infusion, decoction, tincture, or extract; its nauseous taste is best disguised by cinnamon. DOSE of the powder, grs. v. to ℈j; of the infusion or decoction, f℥j; in large doses all the forms are liable to produce nausea. *Form.* 58. OFF. PREP. *Infusum Cuspariæ.* L. *Tinct. Bonplandiæ Trifoliatæ.* E. *Tinct. Angusturæ.* D. ADULTERATIONS. There is found in the market a particular bark which has been called FINE ANGUSTURA, but which is of a different species, and is a very energetic poison. This bark is characterized by having its epidermis covered with a matter which has the appearance of rust of iron, and which, moreover, possesses certain chemical properties of this metal; for if water acidulated with muriatic acid be agitated in contact with its powder, it assumes a beautiful green colour, and affords with an alkaline prussiate, (*Hydro-cyanate of Potass*) a Prussian blue precipitate. Late researches have detected the presence of an alkaline element in this bark, on which the name of *Brucia* has been bestowed. When this alkali is dissolved in boiling alcohol, and crystallized by spontaneous evaporation, it yields colourless and transparent crystals in the form of oblique quadrangular prisms.

DATURÆ STRAMONII HERBA. E.D.

The Herbaceous part of the Thorn Apple.

QUALITIES. *Odour*, fœtid and narcotic, occasioning headach and stupor; *Taste*, bitter and somewhat nauseous. CHEMICAL COMPOSITION. Gum, resin, and carbonate of ammonia; the recent experiments of M. Brandes have also developed an alkaline element of activity, to which the name of *Daturia* has been assigned; it appears to exist in native combination with malic acid; when in an uncombined state it is nearly insoluble in water, and in cold alcohol, but boiling alcohol dissolves it. It has been obtained with difficulty in the form of quadrangular prisms. SOLUBILITY. The medicinal powers of the herb are alike extracted by aqueous and spirituous menstrua. INCOMPATIBLE SUBSTANCES. The infusion is precipitated by the salts of lead, silver, mercury, and iron; the mineral acids would also appear to produce some essential changes which may diminish its efficacy. Acetic acid increases its powers, although it relieves the effects of an over-dose, if administered after the stomach has been emptied. This apparent anomaly is easily explained when we consider, that, in the first case its operation is purely *chemical*, increasing the solubility of the active principle of the plant, while in the latter case, it operates as a *vital* agent, restoring to the nervous system that energy which had been suspended by the narcotic influence of the vegetable. MED. USES. It is narcotic, and has been regarded by many authors as eminently antispasmodic; Dr. Barton, an American physician, made very extensive trials of its efficacy, the result of which is highly favourable to its use. Its root, smoked in the manner of tobacco, has been much extolled as a remedy in the paroxysms of spasmodic asthma; this practice, however, is not unattended with danger;* the same transient feelings of relief may be procured by smoking a mixture of opium and any aromatic herb. FORMS OF EXHIBITION. Some discrepancy of opinion has existed upon this point, the native practitioners in the Carnatic give the powdered root; Hufeland recommends a tincture of the whole plant; in this country an extract of the leaves, or, more lately, of the seeds, has been preferred, and I have been recently informed by Sir Henry Halford, that he has found a tincture made of the seeds,† a very efficient and unobjectionable preparation. Dr. Davy, at my request, has made a series of experiments upon the extracts prepared by Mr. Barry *in vacuo*, and his report upon the effects of that of Stramonium, will be found under the article *Extract. Stramonii*, which see. It is said that the Turks sometimes use the Stramonium instead of Opium, and the Chinese infuse the seeds in beer. Cataplasms of the fresh bruised leaves have been very successfully used in sores of a highly irritable and painful nature.

[The Datura grows so abundantly, and is so generally known in the United States by the various synonims of *Thorn-apple*, *Jamestown-weed*, *Stink-weed*, &c. that nothing need be said of its *botanical character*, excepting that the *D. Stramonium* and *D. Tatula*,—the former characterized by green stalks and white flowers, the latter by purple stalks and flowers, are only varieties of the same species, possessing the same medicinal, and, (with the foregoing exceptions,) the same sensible properties.*

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* It is said to have been introduced into this country from Ceylon. See the observations made upon the subject of the narcotics used by the Indians, in vol. i. p. 12.

† The seeds undoubtedly contain, in an eminent degree, all the properties of the plants. It was in the seeds that Brandes first discovered the *Daturia*.

The powerful narcotic and antispasmodic properties of this vegetable have, within a few years, been demonstrably confirmed by several of the most respectable physicians of our country. Its utility, in allaying morbid irritation in various nervous diseases, disconnected with fever, renders it a medicine of great value. Dr. E. Ives, of New Haven, showed me a detailed account of not less than a dozen cases of epilepsy, in most of which he had used it with perfect success. Some of these were in adults, and from their long duration, were apparently of the most hopeless kind. It has also in several instances affected a permanent cure of Tic Douloureux. I have seen the happiest results from it in numerous spasmodic diseases of more common occurrence, also in various anomalous nervous affections, which had resisted the antispasmodic powers of opium, and of many other active remedies belonging to the same class. Its action on the nervous system is almost uniformly evinced by dilatation of the pupils of the eyes. When given in large doses it produces a species of intoxication; but in the cases that I have witnessed, the previous excitement and subsequent exhaustion were not so great as what accompany intoxication from alcoholic spirits. In still larger quantities the *Datura* causes dryness of the fauces, vertigo, convulsions and death. It does not appear, however, to be a medicine of uncertain or uncontrollable operation, or at most, not more so than every other narcotic of equal power.

I have prescribed it in various forms, and am fully convinced that the extract of the seeds is the most eligible preparation. From observing their effects when taken in substance I was induced to prepare an extract from them long before the publication of Dr. Marcet's paper on the subject. I have yet a portion of the same extract, and it does not appear to have diminished materially in strength by keeping; gr. ss will in most instances produce manifest effects.* The *stramonium ointment* prepared by simmering the fresh leaves with lard† is efficacious in relieving the pain and hastening the discussion of indolent inflammatory tumours.‡—I.]

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* See Bigelow's American Medical Botany.

† American Pharmacopœia.

‡ Dr. Marcet gives the following directions for making the extract. "One pound of the seeds of Stamonium, after being well bruised, are boiled in three gallons of water down to one gallon. The decoction is strained, and the seeds

DECOCTA. L.E.D. *Decoctions.*

These are solutions of the active principles of vegetables, obtained by boiling them in water. To decide upon the expediency of this form of preparation, in each particular case, requires a knowledge of the chemical composition of the substance in question. In conducting the operation, the following rules must be observed.

1. *Those substances only should be decocted, whose medicinal powers reside in principles which are soluble in water.*

2. *If the active principle be volatile, decoction must be an injurious process; and, if it consist of extractive matter, long boiling, by favouring its oxidizement, will render it insipid, insoluble, and inert.*

3. *The substances to be decocted should be previously bruised, or sliced, so as to expose an extended surface to the action of the water.*

4. *The substances should be completely covered with water, and the vessel slightly closed, in order to prevent, as much as possible, the access of air: the boiling should be continued, without interruption, and gently.*

5. *In compound decoctions, it is sometimes convenient not to put in all the ingredients from the beginning, but in succession, according to their hardness, and the difficulty with which their virtues are extracted; and if any aromatic, or other substances containing volatile principles, or oxidizable matter, enter into the composition, the boiling decoction should be simply poured upon them, and covered up until cold.*

6. *The relative proportions of different vegetable substances to the water, must be regulated by their nature; the following general rule may be admitted; of roots, barks, or dried woods, from ʒij to ʒvj, to every pint of water; of herbs, leaves, or flowers, half that quantity will suffice.*

7. *The decoction ought to be filtered through linen, while hot, as important portions of the dissolved matter are frequently*

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are again boiled in one gallon of water to two quarts. This second decoction is strained, and being mixed with the former, the whole is allowed to stand for twelve hours. The liquor is then drawn off free from fecula and oil, and evaporated to a proper consistence, the better part of the evaporation being performed in a water-bath. A considerable proportion of oil is separated from the seeds by boiling, which is troublesome in the extract."

If the seeds be boiled without bruising, the precaution recommended by Dr. Marcet to separate the oil from the decoction will be unnecessary. The extract obtained will be equally good, but in smaller quantity.—I.

deposited on cooling; care must be also taken that the filtre is not too fine, for it frequently happens, that the virtues of a decoction depend upon the presence of particles which are suspended in a minutely divided state.

8. *A decoction should be prepared in small quantities only, and never employed, especially in summer, forty-eight hours after it has been made. It should be considered as an extemporaneous preparation, but introduced into the pharmacopœia for the purpose of convenience, and for the sake of abridging the labour of the physician.*

It is very important that the water employed for making decoctions, should be free from that quality which it denominated *hardness*.

The officinal decoctions may be classed into simple and compound preparations.

1. *Simple.*

Decoctum Cinchonæ. See Cinchona, and *Form.* 41, 42, 127. The codex of Paris directs a decoction of bark, "*Decoctum Kinæ Kinæ,*" which is only half the strength of ours, but contains an addition of a small quantity of carbonate of potass.

Decoctum Cydoniæ. The inner coats of the seeds of the Quince (*Pyrus Cydonia*) yield a very large proportion of mucilage, but as hot water extracts from them also fecula and other principles, the decoction very soon decomposes. It has been strongly recommended as an application to erysipelatous surfaces; and it would seem to be peculiarly adapted for such a purpose, since it is not so easily washed away from the part to which it is applied, as ordinary mucilage; for the same reason it has been preferred as an ingredient in injections, gargles, &c. The native practitioners of India employ it as a cooling mucilaginous drink in gonorrhœa. An ounce of bruised Quince seed will make three pints of water as thick and ropy as the white of an egg; hence two drachms, the quantity directed by the College, is amply sufficient for a pint of the decoction. It is coagulated by *alcohol*, *acids*, and *metallic salts*.

Decoctum Digitalis. D. This is a very improper form for the exhibition of digitalis, being variable in strength.

Decoctum Dulcamaræ. L. In making this decoction, we must take care that the operation of boiling is not continued too long. See *Dulcamaræ Caules.* Dose from f℥ss to f℥j.

Decoctum Lichenis. L.E.D. In this preparation, we have the bitter principle of the plant united with its fecula. A portion of the former may be removed by macerating the lichen, and rejecting the first water. If ℥j of the mass be boiled for a quarter of an hour in f℥vj of water, we shall obtain mucilage of a consistence similar to that composed of one part of gum arabic, and three of water. Its exhibition requires the same precaution as that of *Mucilago Acaciæ*. Dose; a wine glassfull occasionally. From the large proportion of fecula which this moss contains, it is perhaps as nutritive as any vegetable substance, the *Cerealia* of course excepted. See *Lichen Island*.

Decoctum Papaveris. L. In making this decoction, the whole of the capsule should be bruised, in order to obtain its mucilage and anodyne principle; the seeds should be also retained, as they yield a portion of bland oil which increases the emollient quality of the decoction. A large quantity of fixed oil is constantly in the market, which is derived from the seeds of the poppy. This decoction is a useful fomentation in painful swellings, &c.

Decoctum Quercus. L.E. Decoction is the usual form in which *Oak Bark* is exhibited, since all its active principles are soluble in water. Its astringent virtues depend upon gallic acid, tannin, and extractive. The decoction is disturbed by the following substances, *the infusion of yellow cinchona; subacetate* and *acetate of lead; solutions of isinglass;* the *preparations of iron; oxymuriate of mercury;* and *sulphate of zinc;* all *alkaline substances* destroy its astringency, and are consequently incompatible with it. It is principally useful as a local astringent, in the forms of gargle, injection, or lotion. Its internal exhibition in obstinate diarrhœas, and alvine hemorrhages, has also proved highly beneficial. See *Form.* 51, 61.

Decoctum Sarsaparillæ. L.E D. See Sarsaparilla. In making this decoction, it is rarely properly digested or boiled for a sufficient length of time to extract its virtues. The only salts which occasion precipitates in this decoction are, *nitrate of mercury* and *acetate of lead; lime water* has the same effect.

Decoctum Veratri. Stimulant and acrid; internally, it is cathartic, but too violent to be safely exhibited; it is useful as a lotion in scabies, and other cutaneous eruptions.

2. *Compound Decoctions.*

Decoctum Aloes Compositum. It resembles the well known *Baume de vie*, and is a scientific preparation, constructed upon the true principles of medicinal combination. Aloes is the base, to which are added, 1st, sub-carbonate of potass, 2dly, powdered myrrh, 3dly, extract of liquorice, 4thly, saffron, and after the decoction is made, 5thly, compound tincture of cardamoms. By the 1st ingredient the aloes is rendered more soluble; the 2d and 3d suspend the portion not dissolved, and at the same time disguise its bitterness; the fourth imparts an aromatic flavour, and the 5th not only renders it more grateful to the stomach, but prevents any spontaneous decomposition from taking place. Its taste is improved by keeping. It is a warm, gentle cathartic. *Form.* 80. Dose f ss to f℥j. Its operation is different from that of simple aloes. See *Aloes.* The following substances are incompatible with it; *strong acids, oxy-muriate of mercury; tartarized antimony; sulphate of zinc;* and *acetate of lead;* and those salts which are decomposed by the fixed alkalies.

Decoctum Guaiaci Compositum. E. Commonly called *Decoction of woods.* This decoction has fallen into disuse, and deservedly, for it can possess but little power, except as a diluent, or demulcent; the water takes up from the guaiacum only a small portion of extractive matter, and the virtues of sassafras, if any, must be dissipated.

Decoctum Hordei Compositum.* An elegant and useful demulcent, with an aperient tendency.

Decoctum Sarsaparillæ Compositum. L.D. This decoction, which is an imitation of the once celebrated *Lisbon Diet Drink,*† differs materially from the *Decoct: Guaiaci comp:* from the addition of the mezereon root, which renders it diaphoretic and alterative, and useful in the treatment of secondary syphilis, and chronic rheumatism. Dose, from f℥iv to fʒvj three or four times a day.

DIGITALIS FOLIA. L.E.D. (Digitalis Purpurea)

Foxglove.

Qualities. The leaves, when properly dried, have a slight narcotic *odour*, and a bitter nauseous *taste*, and when reduced to powder, a beautiful green *colour*. **Chemical Composition.**

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* The oriental beverage, *Sherbet*, from the Arabic word *Sherb*, to drink, so celebrated in eastern song, is a decoction of barley-meal and sugar, perfumed with roses, orange flower, violet, or citron.

† **Lisbon Diet Drink.** *Decoctum Lusitanicum.*—℞. *Sarsap: concis: Rad: Chinæ*, a a ʒj—*Nucum Jugland: Cortice Siccatarum*, No. xx. *Antimonii Sulphureti* ℥ij. *Lapidis Pumicis pulverisat:—Aquæ distillat: lib: x.*—The powdered antimony and pumice-stone are to be tied in separate pieces of rag, and boiled along with the other ingredients. The use of the pumice-stone is merely mechanical, to divide the antimony.

Extractive matter, and a green resin, in both of which the narcotic properties reside; they appear also to contain ammonia, and some other salts. SOLUBILITY. Both water and alcohol extract their virtues, but decoction injures them. INCOMPATIBLE SUBSTANCES. See *Infusum Digitalis*. MEDICAL USES. It is directly sedative, although some maintain the contrary opinion, diminishing the frequency of the pulse, and the general irritability of the system, and increasing the action of the absorbents, and the discharge by urine. The effects appear to be in a great degree connected with its sensible influence upon the body, which is indicated by feelings of slight nausea and languor; accordingly, every attempt to prevent these unpleasant effects, or to *correct* the operation of digitalis, by combining it with aromatic, or stimulant medicines, seems to be fatal to the diuretic powers of the remedy. Dr. Blackall in his "Observations upon the cure of Dropsies," has offered some remarks which bear upon this point, and to which I have before referred. *See Volume* I, *page* 128 and 184.

Several of the formulæ introduced under the class of diuretics are combinations supported by high authority, but it is doubtful whether their adoption can be sanctioned upon principle; they are however well calculated to illustrate the nature of diuretic compounds, and this is the only purpose for which they were selected. See *Form.* 103. The French have introduced in their new Codex, an ethereal tincture, *Tinctura Ætherea Digitalis purpureæ*, in which the sedative influence of the plant must be entirely overwhelmed by the stimulant properties of the menstruum. Under the head of *Diuretics*, in the first volume, I have so fully considered the value of diuretic combinations, and the *modus operandi* of Digitalis, that it is unnecessary to dwell upon the subject in this place. Digitalis has considerable influence over the action of the heart; and in certain diseases, attended with inordinate motions of that organ, it proves eminently serviceable; I have employed it with great satisfaction in cases of palpitation connected with a state of general irritability, as so frequently occurs in female disorders; and according to my observations where it succeeds, opium generally does harm. *Form.* 32. FORMS OF EXHIBITION. In substance, tincture, or infusion; the latter form is most efficient as a diuretic. DOSE of the powdered leaves gr. j, in a pill, twice a day; the augmentation of the dose should proceed at the rate of one fourth of the original quantity, every second day, until its operation becomes apparent, either on the kidneys, or on the constitution generally. If it produce such a disturbance in the primæ viæ as to occasion vomiting or purging, its diuretic powers will be lost; in such a case the addition of a small portion of opium, or opiate confection, may be expedient. The distressing effects of an over-dose are best counteracted by tincture of opium in brandy and water, and by the application of a blister to the pit of the stomach. A London Surgeon has lately stated that he has prescribed the tincture of Digitalis, in the dose of twenty five drops, three times a day, in barley-water, with great success in Gonorrhœa. Officinal Prep: *Infus: Digitalis.* L.E. *Tinct: Digital:* L.E.D. *Decoct: Digitalis:* D. It is very important that the leaves of this plant be properly collected, and accurately preserved; they should be gathered when the plant is beginning to flower, and, as it is biennial, in the second year of its growth; the largest and deepest coloured flowers should be also selected, for they are the most powerful; they should be also carefully dried until they become crisp, or they will lose much of their virtue; the too common method of tying them in bundles, and hanging them up to dry, should be avoided, for a fermentation is produced by such means, and the parts least exposed soon become rotten. The powdered leaves ought to be preserved in opaque bottles, and kept from the action of light as well as of air and moisture; a damp atmosphere has, upon a principle already explained, a very injurious operation, by carrying off those faint poisonous effluvia with which its efficacy seems to be intimately connected.

[DRACONTIUM FŒTIDUM. *W.* II. 288.

Ictodes Fœtidus. *Bw.* II. 41.

Symplocarpus Fœtidus. *Bn.* I. 123. *Radix.*

Skunk-cabbage. Poll-cat-weed. Itch-weed. The root.

The botanical habits and peculiar character of this plant, are so well and so generally known in the United States, that it is thought unnecessary to describe its *Specific Characteristics.* Sensible Properties. *Taste,* acrid and pungent, smell peculiarly offensive. Chemical Composition. Mucilage, fecula, a small proportion of resin, and an acrid principle which it is not easy to obtain uncombined. Medicinal Qualities. Professor Bigelow represents this volatile principle to be readily dissipated by drying; and so far as it relates to the root in substance, it accords with my observation. It loses its pungent taste, and appears to be nearly inert in a few weeks after it is gathered; but I prepared an alcoholic extract some years ago, by digesting the fresh roots and the tincture evaporating in the sun, which possessed and retained all the acrimony of the recent root. This appears to me to be the only preparation that can ever become officinal, and whether its properties are of sufficient value to introduce it into general use, is doubtful. This remark is made, however, from the belief that its antispasmodic power is owing to its peculiar odour. On the contrary, some writers affirm that the root retains its remedial virtues after it has lost its pungent sensible qualities, and that the seeds are not less active than the root. I can say nothing of the efficacy of the seeds from personal experience. The fresh leaves are actively rubefacient, and, where they can be obtained, may be used with safety, convenience, and economy.*

Medical Use. It has been most extolled for its antispasmodic powers in relieving asthma, hysteria, and whooping cough; it may be advantageously used in all other spasmodic complaints of the respiratory organs. Doses from ʒss to ʒj of the powdered root, gr. ij to gr. v. of the extract, repeated every two hours.—I.]

DULCAMARÆ CAULES L.D. (Solanum Dulcamara.)

The Twigs of *Woody Nightshade* or *Bittersweet*.

The virtues of this plant are extracted by boiling water, but long coction destroys them; the usual and best form in which it can be administered is that of decoction or infusion. It is now rarely used except in cutaneous affections. Officinal Prep: *Decoct: Dulcam*: L.

ELATERII POMA. L.E.D. (Momordica Elaterium.)

Wild, or *Squirting Cucumber*.

This plant appears, from the testimony of Dioscorides and other writers, to have been employed by the ancient physicians with much confidence and success. All the parts of the plants were considered as purgative, although not in an equal degree; thus Geoffroy, "*radicum vis catharthica major est quam foliorum, minor vero quam fructuum.*" This question has very lately been set at rest by the judicious experiments of Dr. Clutterbuck,† which prove that the active principle of this plant resides more particularly in the juice which is lodged in the centre of the fruit, and which spontaneously subsides from it; when this substance is freed from extraneous matter, it possesses very energetic powers, and appears to me to be entitled to consideration as a distinct proximate principle which I shall venture to call *Elatin*. See *Extractum Elaterii.*

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* See Collections for an Essay towards a Materia Medica of the United States, by Benjamin Smith Barton, 3d edition. Page 21.

† See London Medical Repository, Vol. xii. No. 67.

ELEMI. L.D. (Amyris Elemifera. *Resina.*) *Elemi.*

This substance is what is generally termed a *gum-resin;* that is, a compound consisting of gum, resin, and volatile oil: late researches, however, seem to show that these bodies are compounds of a peculiar character, consisting of a volatile substance, something between essential oil and resin, and a constituent which possesses the properties of extractive rather than those of gum.

True Elemi has a fragrant aromatic odour, not unlike that of fennel-seeds, but more potent. When powdered it mixes with any unguent; it also combines with balsams and oils, and by the aid of heat, with turpentine. Uses. It is only employed for forming the *mild digestive ointment*, which bears its name, viz. *Unguent: Elemi comp:* L.D.

EMPLASTRA. L.E.D. Plasters.

The principles upon which this form of preparation is to be constructed, are fully detailed in the first volume of this work.

Emplastrum Ammoniaci. L. *Ammoniacum* reduced to a suitable consistence by distilled vinegar. It adheres to the skin without irritating it, and without being attended with any unpleasant smell.*

Emplastrum Ammoniaci cum Hydrargyro. L.D. The mercury in this plaster is in the state of oxidation *ad minimum*. It is discutient and resolvent, and is applicable to indurated glands, and venereal nodes, and for removing indurations of the periosteum, remaining after a course of mercury; the addition of the ammoniacum increases the stimulating and discutient powers of the mercury, which gives this plaster a superiority over the *Emplastrum Hydrargyri*. It is also powerfully adhesive.

Emplastrum Assafœtidæ. E. Emplast. Plumbi and Assafœtida, of each *two parts*, galbanum and yellow wax, of each *one part*. I have seen it useful in flatulent cholic, when applied over the umbilical region.

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* A person of the name of Sterry, in the Borough, prepares a plaster of this description, which is sought after with great avidity. What a blessing it would be upon the community, if every nostrum were equally innocuous!

Emplastrum Ceræ. L. *Emplast: Simplex*. E. This is the *Emplast: Ceræ* of P.L. 1787, the *Emplast: Attrahens* of 1745, so called because it was formerly employed to keep up a discharge from a blistered surface, and the *Emplastrum de melilolo simplex* of 1720.

Emplastrum Cumini. L. A valuable combination of warm and stimulant ingredients.

Emplastrum Galbani Compositum. L.D. *Emplast: Gummos*. E. More powerful than the preceding plaster. In indolent glandular enlargements of a strumous character, in fixed and long-continued pains in the neighbourhood of the joints, or in anomalous or arthritic pains of the ligaments, this plaster is said to be frequently beneficial.

Emplastrum Hydrargyri. L.E. The mercury in this plaster is in the state of oxidation *ad minimum;* each drachm containing about fifteen grains of mercury, (*sixteen grains, Edinb.*) It is alterative, discutient, and sometimes sialogogue; but it is inferior to the *Emplast: Ammoniac: cum Hydrargyro*.

Emplastrum Lyttæ. L. *Emplast: Cantharidis vesicatoriæ*. E.D. A variety of substances has in different times been employed for producing vesication, but no one has been found to answer with so much certainty and mildness as the *Lyttæ*. All the others are apt to leave ill-conditioned ulcers; true it is, that the emplastrum lyttæ will occasionally fail, but this is generally attributable to some inattention, or want of caution on the part of the person who prepares it; in spreading it, the spatula should never be heated beyond the degree of boiling water; the plaster also should be sufficiently secured on the part by slips of adhesive plaster, but it ought not to be bound on too tight; where the cuticle is thick, the application of a poultice for an hour, previous to that of the blister, will be useful, or the part may be washed with vinegar. In consequence of the absorption of the active principle of the *Lyttæ*, blisters are apt to occasion strangury and bloody urine; it has been a problem, therefore, of some importance to discover a plan by which such an absorption may be obviated; for this purpose, camphor has been recommended to be mixed with the blistering composition, and a piece of thin gauze has been interposed between the plaster and the skin; but it has been lately found, that ebullition in water deprives the *Lyttæ* of all power of thus acting on the kidneys, without in the least diminishing their vesicatory properties: the ordinary time required for the full action of a blister is ten or twelve hours, but if it be applied to the head, double that period will be necessary. Children, owing to delicacy of skin, are more speedily blistered, the epispastic may therefore be removed earlier. In some cases the blistered parts, instead of healing kindly, become a spreading sore; whenever this occurs, poultices are the best applications; it may arise from a peculiar irritability of the constitution, although I apprehend that it not unfrequently depends upon the sophistication of the plaster with euphorbium. In cases where it is desirable to keep up the local irritation, it is still a question with some practitioners whether it be more advisable to encourage a discharge from the vesicated part by some appropriate stimulant, or to renew the vesication at short intervals by repeated blisters; the latter mode is perhaps to be preferred, as being more effectual, and certainly less troublesome to the patient: it has moreover been stated,* that by a repeated application of this nature, the influence excited appears to extend much deeper, so as to derive a greater quantity of blood from the immediate neighbourhood of the vessels, or from the vessels themselves which are in a state of disease, than the influence excited by an application less stimulating upon the surface of a part already abraded. The character of the discharge would likewise appear essentially different; it being in the latter case a purulent secretion from the superficial exhalants of the surface only; in the former, a copious effusion of serum, mixed with a large portion of lymph, produced from a deeper order of vessels.

Emplastrum Opii. L.E. This plaster is supposed to be anodyne, but it is very doubtful whether the opium *can*, in such a state, produce any specific effect. See *Form: 5.*

Emplastrum Picis Compositum. L. *Emplast: Picis burgundicæ*, P.L. 1787. It is stimulant and rubefacient, and is often employed as an application to the chest, in pulmonary complaints: the serous exudation, however, which it produces, frequently occasions so much irritation that we are compelled to remove it.

Emplastrum Plumbi. L. *Emplast: Oxydi Plumbi semivitrei.* E. *Emplast: Lythargiri.* P.L. 1787. *Emplast: commune*, 1745. *Diachylon*† *Simplex*, P.L. 1720. This is a very important plaster, since it forms the basis of a great many others; under the name of *Diachylon* it has been long known, and employed as a common application to excoriations, and for retaining the edges of fresh cut wounds in a state of apposition, and at the same time for defending them from the action of the air; when long kept it changes its colour, and loses its adhesive properties, and by high temperature the oxyd of lead is revived.*

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* Pharmacopœia Chirurgica, p. 89.

† *Diachylon*, a δια et χυλος succus, i. e. *a Plaster prepared from expressed juices.* It has been asserted that all the pharmaceutical names beginning with *Dia*, are of Arabian origin, this however is not the fact; we frequently meet with the expression in Galen, ἡ δια δαλάμινθ ἡ δια δυοιν ἀριστολοχιοιν ἡ δι: &c. &c.

Emplastrum Resinæ. L. Olim, *Emplast: commune adhæsivum*, P.L. 1745. Emplast: Resinosum. E. Emplast: Lithargyri cum Resina. D. It is defensive, adhesive, and stimulant.†

Emplastrum Saponis. L.D. *Emplastrum Saponaceum.* E. The Soap Plaster is said to be a mild discutient application.

[ERIGERON CANADENSE. W. III. 1954. *Planta.*
Canada Flea-bane. The Plant.

Specific Character. Stem hispid, panicled; leaves lance-linear, ciliate; calyx cylindric; rays crowded short; flowers small. It is an annual indigenous plant—grows abundantly throughout the United States, most commonly in dry sandy soils. Its height is from four to six feet. It flowers in July and August. The whole plant is medicinal, but the leaves and flowers possess the most virtue.

Sensible Properties. *Taste*, astringent, acrimonious, and bitter. *Smell*, odoriferous and agreeable. **Chemical Composition.** Bitter extractive, tannin, gallic acid and essential oil. **Solubility.** The bitter extractive, which probably contains most of its remedial powers, is yielded to alcohol, and water. **Medicinal Properties.** Diuretic, tonic, and astringent. The medicinal properties of this article were investigated and conclusively proved, by my late lamented friend, Cornelius E. De Puy, M. D.* From very extensive practical observation, he found it a useful remedy in chronic diarrhœa, and in some cases it effected a perfect cure without any auxiliary means; but its operation was most unequivocal in increasing the secretion of the urine. In a case of ascites where the quantity of urine was considerably less than natural, (the diet and drink of the patient were so regulated as to show the exclusive effects of the medicine) a pint of the infusion given daily, for five successive days, increased the quantity of urine from twenty-four to sixty-seven ounces in a day, at which time the tumefaction had considerably diminished. I witnessed many of Dr. De Puy's experiments with the Flea-bane, and have frequently prescribed it since, and I have reason to conclude that it possesses sufficient merit to justify its being numbered among the more valuable of our indigenous medicines. Medicinal Preparations The tincture prepared by digesting ʒi. of the leaves and flowers in oj of proof spirit: the *Infusion* with the same proportions, substituting boiling water for proof spirit; and the extract. The tincture and infusion are the most active diuretics; the extract is most astringent. Doses. ℥ss. to ℥i. of the Tinct. ℥ii. to ℥iv. of the infusion, gr. v. to gr. x. of the Extract, to be repeated every two hours.

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* At Apothecaries' Hall, this plaster, as well as others, is made in a steam apparatus, which is so well regulated, that a uniform temperature of 240° Fah: is ensured during the whole process.

† **Baynton's Adhesive Plaster.** (*Strapping.*) Differs only from this preparation in containing rather less resin, six drachms only being added to one pound of the litharge plaster. This excellent plaster is sold ready spread on calico.

Corn Plaster. The green-coloured plaster sold under this title is usually composed of 3 parts of wax, 4 of Burgundy pitch, and 2 of common turpentine; to which is added one part of verdigris.

‡ Physico Med. Transactions. Vol. I.

EUPATORIUM.

Syngenesia Polygamia æqualis. Lin.

Several species of Eupatorium have long been used as domestic remedies, but their properties are so similar, excepting in degree, that few have been introduced into the Materia Medica, and three only into the United States Pharmacopœia. The most valuable of these is the

EUPATORIUM PERFOLIATUM.

W. III. 1761. *Bw. I.* 32. *Bn. II.* 135. *Herba.*

Thorough-wort. Boneset. The whole plant.

Specific Character. Leaves connate-perfoliate, oblong serrate rugose, downy beneath: stem villose, ordinarily about three feet high; sometimes it grows to the height of five or six feet; flowers in August and September; root perennial; is found in low marshy situations in almost all parts of the United States. Chemical Composition. "A free acid tannin, extractive matter, a gummy matter, resin, azote, lime, gallic acid, and a resiniform matter." (*Anderson.*) *Taste,* intensely bitter. Solubility. Its virtues are readily and fully yielded both to proof spirit and water. Medicinal

Properties. It was long ago used as a tonic by the aborigines of this country, but its properties were not fully investigated and its remedial character appreciated by the profession, till the publication of Dr. Andrew Anderson's excellent inaugural dissertation on the Eupatorium Perfoliatum in 1813. From that time to the present its reputation has been increasing. It is peculiarly valuable from the diversified effects that may be produced by it, by varying the preparation and the dose. These may be so modified as to secure its operation as a tonic, emetic, laxative, and sudorific; and from its effects in opening the secretions of the whole system, there is, perhaps, no other bitter or tonic, of equal activity, that can be exhibited in febrile affections, with so little danger of increasing excitement or producing congestion. In the year 1814, while resident physician to the New-York Almshouse, I had frequent opportunities of testing its tonic powers, as it was enjoined, from motives of economy, upon the medical department of the institution, to substitute this article for the Peruvian bark, when it could be done with safety to the patient. In many instances it proved an efficacious substitute. It is a valuable emetic in the early stage of autumnal intermittents. Perhaps the greatest objection that can be offered to its general use, is its nauseous and disagreeable taste. **Medicinal Preparations.** As a tonic, in intermittent fevers, when there is no danger from excessive excitement, and in dyspeptic complaints, the leaves and flowers may be given, in substance or in cold decoction; in these cases aromatics are sometimes advantageously combined with it. The warm decoction, in large doses, operates with great certainty and safety as an emetic. In smaller doses, it may be given as a tonic, when bark is inadmissible. All its preparations will, in most instances, produce diaphoresis and quicken the peristaltic motion; but a warm infusion is preferable when the principal object is to promote perspiration. **Doses.** ℈j. to ʒj. of the powdered leaves and flowers; ℥ij. to ℥iv. of the decoction, when its tonic effects are required, and double this quantity may be given every half hour as a sudorific.

EUPATORIUM TEUCRIFOLIUM. W. III. 1753. *Herba.*

Wild Horehound. The Herb.

Specific Character. Leaves sessile, distinct, ovate, scabrous; upper ones with coarse teeth at the base, and with the summit entire; about two feet high. **Medicinal Properties.** They do not differ materially from those of the boneset, but are more mild and less energetic. In the southern States this species seems to be preferred to the *perfoliatum*, and as a febrifuge it appears very suitable to the bilious remittents of warm climates. It is less bitter and disagreeable than the boneset; it possesses all the good qualities of the *anthemis nobilis*, with the additional one of an active diaphoretic. MEDICINAL PREPARATIONS. The same as those of the preceding species; the *doses* may with perfect safety be made somewhat larger.

EUPHORBIA.

Spurge.

To this numerous family of plants belong several American species, which are actively medicinal. They possess the common properties of the genus, viz. emetico-cathartic and rubefacient. Two species are introduced into the United States Pharmacopœia, the only ones indigenous to America, whose virtues have been sufficiently investigated and defined to warrant particular notice.

EUPHORBIA COROLLATA.

W. II. 916. *Bw. III.* 118. *Radix.*

Large Flowering-spurge. Hippo. Indian-physic. The Root.

SPECIFIC CHARACTER. Umbel, five-cleft, and dichotomous; involucels and leaves oblong, obtuse: Petals, obovate and resembling appendages of the calyx. The leaves are exceedingly variable in their figure, some being broad lanceolate, others long and narrow; all of a deep crimson colour: flowers white: is found in the middle and southern States. The SENSIBLE PROPERTIES and CHEMICAL COMPOSITION of this species are similar to those of the one next to be described. MEDICAL USE. It operates with great certainty on the bowels, producing copious purging, and in most instances, if the dose be increased, it provokes vomiting. When externally applied it is actively rubefacient. The *corollata* in its medicinal qualities is allied to the *E. officinalis* and *E. ipecacuanha*, forming the connecting link between them; being as much milder in its operation than the former as it is more energetic than the latter. MEDICINAL PREPARATIONS. I know not that it has been used in any other form than the powdered root in substance. DOSE. Dr. M'Keen states* that he found from gr. iij. to gr. xij. a dose

* See Coxe's American Dispensatory.

producing catharsis in every instance. Dr. Bigelow says, "it exerts its cathartic efficacy in doses of less than 10 gr., and if given to the amount of 15 or 20 gr. it is as sure to vomit as other common emetics in their proper quantities. The only inconveniences attending these doses which have come to my knowledge are, that when given in small quantities for a cathartic, it is liable to produce nausea; in large ones, suitable for an emetic, it has sometimes produced a degree of hypercatharsis."*

EUPHORBIA IPECACUANHA.

· *W. II.* 900. *Bw. III.* 109. *Bn. I.* 211. *Radix.*

American Ipecac. Ipecacuanha. Spurge. The Root.

Specific Character. Procumbent, small, glabrous, leaves opposite, oboval or lanceolate; peduncles axillary, elongated; one flowered. An indigenous American plant, growing in sandy soils in the southern States, and as far north as New-Jersey. The root is perennial, very large in proportion to the plant, being from half an inch to an inch in diameter. Sensible Properties. The dried root is light and brittle, *Colour*, grayish without and white within. *Taste*, sweetish and not unpleasant. Chemical Composition. "It contains a substance of the nature of caout chouc, which is soluble in æther, and precipitated by alcohol; likewise resin, mucus, and probably fecula." (*Bigelow.*) Medical Use. The American profession is much indebted to Drs. W. P. C. Barton and I. Bigelow for the labour and fidelity with which they have investigated the medicinal virtues, and delineated by engravings the botanical features of this important plant. Their conclusions, founded on their own observations and those of many other eminent members of the profession, agree in attaching great value to it as an emetic, in many respects closely allied to the *Callicocca Ipecacuanha.* Dr. Barton speaks with great confidence from his own experience, declaring it to possess virtues which entitle it to supersede the imported Ipecac. The experiments of Dr. Bigelow would seem to show that the mode of its operation is less uniform and more diversified than that of Ipecac. "With a view of becoming acquainted with the operation of this plant," says he, "I performed a series of experiments on its action, assisted by some medical gentlemen of the Boston Dispensary and Almshouse. These trials have led to the conclusion that this root, in doses of from ten to twenty grains, is both an emetic and cathartic: that it is more active than Ipecacuanha, in proportion to the number of grains administered; that in small doses it operates with as much ease as most emetics in a majority of instances. If it fails, however, at first, it is not so safely repeated as many of the emetics in common use. If accumulated in the stomach to the amount of two or three scruples, it finally excites active and long-continued vomiting, attended with a sense of heat, vertigo, indistinct vision, and great prostration of strength. Its operation seems exactly proportionate to the quantity taken, and the vomiting is not checked by the powder being thrown off in the first efforts of the stomach."* It will be perceived from what has been said, that the reputation of this article as an active emetic rests upon extensive experience, and there can be no doubt of its possessing sufficient merit to claim a place in the Materia Medica of our country; but more extensive observation is yet wanting to illustrate and confirm its peculiar properties, and the variety of its operations under different circumstances, or when modified by the agency of other medicines. The difficulty and uncertainty of obtaining pure and genuine officinal Ipecacuanha, renders it desirable that a substitute for it should be found among our native vegetables, and from what is already known of this species of the *Euphorbia*, there is good reason to hope that it may answer this important object. MEDICINAL PREPARATIONS. Dr. Barton remarks, that it may be substituted for Ipecacuanha in the various preparations or combinations in which that substance is employed, but it appears to have been hitherto little used in any other form than the powdered root in substance. DOSE, from gr. x. to gr. xv.—I.]

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* Treatise on the Materia Medica, p. 178.

EUPHORBIÆ GUMMI-RESINA. L.

(Euphorbia Officinarum.) *Euphorbium.*

QUALITIES. This substance is imported from Barbary, in drops or irregular tears; its fracture is vitreous; it is inodorous, but yields a very acrid burning impression to the tongue. CHEMICAL COMPOSITION. It is what is termed a *gum resin*, but its acrid constituent is exclusively in that portion which is soluble in alcohol, and which might be named *Euphorbin*; it appears to form as much as 37 per cent. to which are added of wax 19, malate of lime 20.5, malate of potass 2, and water 5. SOLUBILITY. Water by trituration is rendered milky, but dissolves only one-seventh part; and alcohol one-fourth of it. Uses. Internally administered, it proves very violently drastic, but it is never employed except as an errhine, cautiously diluted with starch, or some inert powder. The Indian practitioners administer it as a purge in obstinate visceral obstructions; and in those cases of costiveness which so often attend an enlargement and induration of the spleen and liver. Farriers use it for blistering horses, and there is good reason to believe that it is sometimes fraudulently introduced to quicken the powers of our emplastrum lyttæ. It enters as an ingredient into a plaster, which has been much celebrated by Cheselden and others, as a stimulating application, to relieve diseases of the hip-joint, and to keep up inflammation of the skin in chronic states of visceral inflammation; the following is its composition. ℞. *Emplast: Picis comp:* ℥iv.—*Euphorbiæ gum-resinæ* ʒss.—*Terebinth: Vulgar. q. s.* Caution, in pulverizing this substance, the dispenser should previously moisten it with vinegar to prevent its rising and excoriating his face.

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* Bigelow's Sequel, p. 177.

EXTRACTA. L.E.D. *Extracts.*

These preparations are obtained by evaporating the watery or spirituous solutions of vegetables, and the native juices obtained from fresh plants by expression, to masses of a tenacious consistence. The London college does not arrange the extracts under the titles of *watery* and *resinous*, which is the arrangement of the Edinburgh pharmacopœia, nor under those of simple and resinous, which is the division observed in that of Dublin, but rejecting all *specific* distinctions, includes, under the *generic* appellation of extract, both the species, as well as all the *inspissated juices.* Since, however, the former of these arrangements will afford greater facilities for introducing the observations which it is my intention to offer, it is retained in this work.

The chemical nature of extracts must obviously be very complicated and variable, depending in a great degree upon the powers of the *menstruum* employed for their preparation; although Fourcroy and Vauquelin considered that *one peculiar* principle was the basis of them all, which they called *Extract, Extractive*, or the *Extractive Principle.* It is distinguished by the following characters, *viz.*

It has a strong taste, varying in different plants; it is soluble in water, and in alcohol when it contains water, but is quite insoluble in *absolute* alcohol and æther; its aqueous solution soon runs into a state of putrefaction; by repeated solutions and evaporations, or by long ebullition, it acquires a deeper colour, and in consequence of its combination with oxygen it becomes insoluble and inert, a fact which is of extreme importance as it regards its pharmaceutical relations; it unites with alumine, and if boiled with its salts, precipitates it, hence wool, cotton, or thread, impregnated with alum, may be died of a fawn-colour by *extractive;* its habitudes with alkalies are very striking, combining most readily, and forming with them compounds of a brownish yellow colour, which are very soluble in water; if to a colourless and extremely dilute solution of extractive, an alkali be added, a brown or yellowish tint is immediately produced, so that under certain circumstances I have found an alkali to be a serviceable test in detecting the presence of extractive matter. The usual brown hue of the *liquor ammoniæ acetatis*, is owing to the action of the ammonia upon traces of vegetable extractive contained in the distilled vinegar.

Much confusion has arisen from the word *extract* having been employed in this double meaning,—*chemically* to express a peculiar vegetable proximate principle, and *pharmaceutically* to denote any substance however complicated in its nature, which has been obtained by the evaporation of a vegetable solution or a native vegetable juice. It is in the latter sense that it is to be understood in the present article.

The different proximate principles of vegetable matter undergo various and indefinite changes with such rapidity, when acted upon by heat, that the process of *extraction* must necessarily more or less impair the medicinal efficacy of a plant, and not unfrequently destroy it altogether, and hence, says Dr. Murray, "with the exception of some of the pure bitters, as gentian, or some of the saccharine vegetables, as liquorice, there is no medicine perhaps but what may be given with more advantage under some other form;" this, however, is not exactly true, for when care is taken in the preparation, we are thus enabled to concentrate *many* very powerful qualities in a small space, and the process lately adopted of evaporating the solutions by the aid of steam, contributes very materially to obviate the failures which so frequently occurred from a too exalted temperature. There is, for instance, great reason to suppose that the black colour which so often characterizes the extracts of commerce, is frequently owing to the decomposition and carbonization of the vegetable matter; the colour therefore of an extract becomes in some degree a test of its goodness. I have lately examined the extracts of commerce with some attention, and I find the presence of iron by no means an uncommon circumstance; when thus contaminated they afford a very dirty coloured solution, which rapidly becomes darker on exposure to air. The extracts mentioned in the preface as made by Mr. Barry, by *evaporating in vacuo*, deserve the attention of the profession; the principle is without doubt well calculated to secure the active matter of the plant from those changes to which it is constantly liable during the ordinary operation of inspissation. The extracts, thus prepared, are certainly more powerful in their effects, and some few of them appear also to possess properties which are not to be distinguished in the Extracts of Commerce; those of narcotic plants, as *Hemlock*, *Hyoscyamus*, *&c.* are decidedly more efficacious; where the practitioner directs their use, he should, to prevent any mistake, add the words *in vacuo præp.* as in *Formula* 4; for on account of the difference in the strength of these preparations, and of those prepared by the ordinary method, they cannot be indiscriminately employed. Dr. John Davy, at my request, has made trial of these extracts in the Military Hospital at Fort Pitt, and as his results coincide with those obtained in my own practice, I shall relate, under the history of each Extract, the comparative conclusions which have been obtained.

I. Watery or Simple Extracts.

Mucilaginous Extracts of Rouelle.

These extracts must of course contain all the principles of a plant which are soluble in water, such as gum, extractive matter, tannin, cinchonin, sugar, fecula, &c. together with any soluble salts which the vegetable may contain. I have also found by experiment that an aqueous extract may even contain, in small proportions, certain elements which, although quite insoluble in water, are nevertheless partially soluble in vegetable infusion. This law of vegetable chemistry has never been expressed, although we have repeated instances of its truth, and a knowledge of it may explain some hitherto unintelligible anomalies. It has been stated that extractive matter is perfectly insoluble in æther, but Mr. A. Thompson found repeatedly, that if a small proportion of resin was present, æther would in that case take up extractive in combination with the resin which it so readily dissolves. As decoction or infusion is a process preliminary to that of extraction, the practitioner must refer to those articles for an enumeration of the different sources of error which are attached to them.

Extractum Aloes Purificatum. L. The resinous element of the aloes is got rid of in this preparation, on which account it is supposed, in an equal dose, to be more purgative and less irritating. *Dose*, gr. x to xv. *Form.* 12, 13, 36.

Extractum Anthemidis. L.E. *Extract. Florum Chamæmeli.* D. This extract furnishes an example of the change effected on some plants by the process of extraction; in this case the volatile oil is dissipated, and a simple bitter remains possessing scarcely any of the characteristic properties of chamomile.

Extractum Cinchonæ. L.D. The properties of the bark in this preparation are much invalidated owing to the oxidizement of its extractive matter, which takes place to such an extent, that not more than one half of the preparation is soluble in water; it is not however altogether devoid of utility, and will often sit lightly on the stomach, when the powder is rejected. Its taste is very bitter, but less austere than the powder. The most beautiful extract of bark, which I have ever seen, was prepared by Mr. Barry of Plough Court; its colour was that of a deep brilliant ruby, and its flavour preserved all the characteristic peculiarity of the recent substance.* *Dose*, grs. x to ʒss. Fourteen ounces of the bark will yield about three ounces and a half of extract.

Extractum Colocynthidis. L. This extract is much milder, although less powerful, than the pulp; *Dose*, grs. v to ʒss. It soon becomes hard and mouldy.†

Extractum Gentianæ. L.E.D. The bitter principle suffers no deterioration in the process; it is used principally as a vehicle for metallic preparations. *Form.* 36, 53, 103.

Extractum Glycyrrhizæ. L.D. It is usually imported from Spain; in the coarser kinds, the pulps of various plums and of prunes are added; it should dissolve in water without leaving any feculence.‡

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* Mystery is rarely practised but as the cloak of imposture, it is therefore unnecessary to add that Mr. Barry made no difficulty in stating the following to be the formula by which it was prepared.

A tincture of Bark, made with rectified spirit, was distilled until the whole of the spirit was driven off, the remaining solution was then left to cool, after which the resin that floated on the surface was removed, and the residuum inspissated at a low temperature.

† **Barclay's Antibilious Pills.** Take of the *Extract of Colocynth* ʒij, *Resin of Jalap* (extract. Jalap) ʒj, *Almond Soap* ʒjss, *Guaiacum* ℈iij, *Tartarised Antimony*, grs. viij, essential oils of *Juniper*, *Caraway*, and *Rosemary*, of each gtt. iv., of syrup of *Buckthorn*, as much as will be sufficient to form a mass, which is to be divided into sixty-four pills.

‡ **Refined Liquorice.** This article, which is sold in the form of cylinders, is made by gently evaporating a solution of the pure extract of liquorice

Extractum Hæmatoxyli. L.E.D. The astringent properties of the *logwood* are preserved in the extract, but it becomes so extremely hard, that pills made of it very commonly pass through the body without undergoing the least change. *Dose*, grs. x to ʒss dissolved in cinnamon water: it sometimes imparts a bloody hue to the urine of those who have taken it.

Extractum Humuli. L. The bitter taste of the hop characterizes this preparation; whether it possesses, or not, any anodyne properties, seems very doubtful. *Dose*, grs. v to ℈j.

Extractum Opii. L.D. As it contains less resinous matter than crude opium, it is supposed to produce its effects with less subsequent derangement. See *Opium*. *Dose*, gr. j to v, for an adult.

Extractum Papaveris. L.D. It is a weak opium. *Dose*, grs. ij to ℈j.

Extractum Sarsaparillæ. Notwithstanding the reputation which this preparation has acquired, it is very doubtful whether it possesses any medicinal powers.

Extractum Stramonii. This extract was first recommended by Stöerck, as a powerful remedy in maniacal affections; its probable value in such diseases appears to have been suggested by a very curious process of reasoning, viz. that as it deranged the intellect of the sane, it might possibly correct that of the insane. Experience has certainly not confirmed the very sanguine report of Stöerck with regard to its powers, but it has satisfactorily shown its occasional value in violent paroxysms, in quieting the mind, and procuring rest. I am informed by my friend Dr. Davy, that, for such an object, it has been very frequently, and successfully, given in the Lunatic Military Hospital at Fort Clarence. He farther states that he has himself made many trials with the extract of Stramonium, prepared by Mr. Barry, (*in vacuo*) as well as with the common extract; and that he finds the former to be uniformly more powerful. "In most diseases," says he, "this medicine would seem uncertain in its operation, sometimes occasioning an anodyne effect, and, at other times, producing irritation, and preventing sleep; I have, however, seen very beneficial effects from it in asthma, and in coughs that have a nightly exacerbation, in doses of from gr. ¼ to gr. 2, daily.

Extractum Taraxaci. L.D. The medicinal powers of Dandelion are asserted to exist unimpaired in this preparation,

with half its weight of gum arabic, rolling the mass and cutting it into lengths, and then polishing, by rolling them together in a box: many impurities however are fraudulently introduced into this article, such even as *glue*, &c.

but it becomes inert by keeping. See *Taraxacum*. *Dose*, grs. x to ʒj, in combination with sulphate of potass.

2. *Spirituous or Resinous Extracts.*

These may contain, with the exception of gum, all the ingredients contained in watery extracts, besides resin; their composition however will greatly depend upon the strength of the spirit employed as the solvent; but of this I shall speak more fully under the article *Tincture.*

Extractum Cinchonæ Resinosum. L.E.D. The operation of spirit in this preparation is twofold; it extracts from the bark the element which is insoluble in water, and it diminishes the tendency in the extractive matter to absorb oxygen during the process. *Dose*, grs. x to xxx. It is said that a spurious extract of bark is to be met with in the market, consisting of the extract of the horse-chestnut tree bark, and yellow resin.

Extractum Colocynthidis Compositum. L.D. *Extract. Catharticum.* P.L. 1775. *Pilulæ Rudii.* P.L. 1720. This preparation has been established through successive pharmacopœias, and has undergone some modification in each; in the present edition the soap has been omitted, and its solubility is thereby decreased, and its mildness as a cathartic diminished. The omission of this ingredient was suggested by the consideration of its being incompatible with *Calomel;* this however is *not* the case. It presents a combination of purgative substances which is highly judicious, and will be found to be more powerful than an equivalent dose of any *one* of the ingredients. *Dose*, gr. vj to ʒss, *Form.* 71, 81, 88.

Extractum Jalapæ. L.E.D. It is purgative, but is liable to gripe, unless it be triturated with sugar and almonds, or mucilage, so as to form an emulsion. *Dose*, grs. x to ℈j.

Extractum Rhei. L. The powers of the Rhubarb are considerably impaired in this extract. *Dose*, gr. x to ʒss. *Form.* 78.

3. *Inspissated Juices.*

These preparations are obtained by expressing the juices from fresh plants, and evaporating them in a water-bath; they are generally of a lighter colour than common extracts, and they are certainly much more active, although there is a great difference in the activity of different samples; and perhaps the *medicinal* powers of the juices themselves are very much under the control of soil and season. That they vary *in quantity* from such causes we have ample proof; thus in moist seasons, Baumé obtained five pounds of inspissated juice from thirty pounds of *elderberries*, whereas, in dry seasons, he could rarely get more than two. From *hemlock* he procured in October, 1796, 7·5 per cent. of inspissated juice, and in May of the same year only 3·7; on the contrary, in August, 1768, 4 *per cent.*, and in May 1770, as much as 6·5; but in general the product in the autumnal months was the most considerable.

The modes of preparing the inspissated juices of the same plant vary in the different pharmacopœias, and in several points that are very *essential;* some direct the expressed juices to be *immediately* inspissated, others allow them to undergo a slight degree of fermentation, and some *defecate* them, before they proceed to their inspissation.

Extractum (*Succus Spissatus.* E.) **Aconiti.** L.E. The medicinal properties of this preparation are analogous to those of the recent *Wolfsbane*, viz. narcotic, and in some cases diuretic, (see *Form.* 128.) It is however rarely used. *Dose*, at first, should not exceed gr. ½, but it may be gradually increased. I have not yet, says Dr. Davy, in a letter recently received from him, had much experience of the *Extractum Aconiti*, but that little is favourable to its use; "in some cases of chronic rheumatism, and in some of intermittent fever, complicated with visceral disease, it has had a beneficial effect not to be mistaken; the dose has been from one to two grains." Dr. Stöerck, who first tried this medicine, observed from it a powerful diaphoretic effect; this, says Dr. Davy, "I have not noticed, and yet the extract which I have used was prepared by Mr. Barry, *in vacuo*, which is certainly far more powerful than that employed by Stöerck; the latter, when applied to the tongue, '*levissimam tantum titillationem excitabat*,' whereas that of Mr. Barry produces a most disagreeable sensation of burning, which extends to the throat; and in one instance, when applied to the tip of my tongue, it occasioned ulceration."

Extractum Belladonnæ. L.E. See *Belladonnæ Folia. Dose*, gr. j, gradually increased to gr. v, in the form of a pill. Dr. Davy has made a few trials of Barry's Extract; the results of which he informs me are not at all favourable to the use of this medicine; it is much more powerful than the common extract, and can only be given with safety in small doses; "in several instances," says he, "I have not been able to repeat a grain dose daily, more than thrice, on account of the alarming symptoms produced, as headach, vertigo, indistinct vision with dilated pupil, and, in one case, irritation of the bladder, occasioning very frequent micturition; in chronic rheumatism and catarrh, with severe cough, the only diseases in which I have yet given it, it has not appeared to be in the least serviceable; it may probably prove valuable to the oculist; from trials that have been made of it here by Mr. Miller, Assistant Surgeon to the Forces, it has been found to dilate the pupil beyond the common extract. Stöerck even introduced his extract into the eye with impunity. Acrid as the preparation is which I have used the patients have never complained of it, nor have I known any disagreeable effects from it, when applied in solution, sufficiently dilute."

Extractum (*Succus Spissatus.* E.D.) **Conii. L.** Much of this extract, as it is found in commerce, has not been prepared with equal fidelity, nor with due attention to the season when the plant is in its greatest perfection; Dr. Fothergill says, "I know from repeated experiments, that the extract which has been prepared from *hemlock*, before the plant arrives at maturity, is much inferior to that which is made when the plant has acquired its full vigour, and is rather on the verge of decline: just when the flowers fade, the rudiments of the seeds become observable, and the habit of the plant inclines to yellow, *is the proper time* to collect it;" the plants which grow in places exposed to the sun should be selected, as being more *virose* than those that grow in the shade: still, however, with every precaution, it will always be uncertain in strength. Orfila found that an extract prepared by boiling the dried powder in water, and evaporating the decoction, was inert; in fact, the whole of the activity of the plant resides in a resinous element *insoluble* in water, and for which I have proposed the name of *Conein.*[*] Extract of hemlock, when judiciously prepared, is a very valuable sedative; I state this from ample experience; and when combined with Hyoscyamus, and adapted by means of mucilage and syrup, to the form of a mixture, it affords a more effectual palliative than any remedy with which I am acquainted, for coughs and pulmonary irritation. *Form.* 19, is that from which I have derived the greatest benefit in such cases. See also *Form.* 2, 3, 4, 19, 57. Since the fourth edition of the present work, I requested my friend Dr. John Davy to make trial of its efficacy in the Military Hospital at Chatham, and I here introduce his report upon the subject;—"My experience of the effects upon the *Extractum Conii* perfectly agrees with that of Dr. Paris, as stated in the fourth edition of the Pharmacologia, and I am of his opinion, that when properly prepared and administered, it is a very valuable sedative; I have given it to the extent daily of from a scruple to a drachm, in chronic catarrh, and in phthisis pulmonalis, either alone or in conjunction with the extract of Hyoscyamus, and it has afforded more relief than any other medicine that I have tried. From two or three trials of it in pneumonia, I am disposed to think it may be very serviceable in certain forms of this disease, in which venesection is contra-indicated by extreme debility; and also in measles. In the trials alluded to, I commenced giving it in the large dose of a drachm, daily, suspended in water containing in solution a grain of *Antimonium Tartarizatum.* In a very few instances, where I have from the commencement given it in a large dose, as from ʒj to ʒiss. it has occasioned hallucination of ideas, which in two cases was attended with excitement of the sensorium and increased action of the heart, and in one case, with diminished activity of both. The Extract of Conium, prepared by Mr. Barry, is the most powerful one I have ever used, indeed until I tried it, I had no just idea of the virtues of Conium as a medicine; but I am now disposed to give credit to Stöerck's account of its efficacy in various chronic diseases; and I have no doubt but that this valuable medicine has fallen into comparative disrepute and disuse from the bad quality of the extract commonly employed." Dr. Maton has found that the value of this extract is greatly increased by including the seeds in its preparation. *Dose,* grs. v to ℈j or more, twice or thrice a day; in a full dose it produces giddiness, a slight nausea, and a tremor of the body; a peculiar heavy sensation is also experienced about the eyes; and the bowels become gently relaxed: unless some of these sensations are produced, we are never sure that the remedy has had a *fair trial* of its effects. Patients will generally bear a larger dose at night than at noon, and at noon than in the morning.

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[*] The frequent failure of this article is most commonly ascribed to its having been injured by long keeping; but in addition to what is observed above of the inefficacy of the watery extract, the manner in which it is prepared in this country is sufficient to show that much of it sold in our shops, is unworthy of confidence, and altogether unfit for use. For several years past an individual in New-England, has manufactured from 700 to 1000 pounds annually, and distributed it among the druggists of the United States. The plant grows abundantly in the neighbourhood of his residence, and at the season of the year when it is most luxuriant he has it mowed, raked, and brought to his laboratory in cart-loads, where, without excluding the vast variety of other vegetables which are cut down and collected with it, the whole "villainous compound" is thrown into a large caldron and boiled in water. After this part of the process is completed, the vegetables are raked out of the decoction which is now evaporated by boiling to the consistence of which we find it in market. As the Hemlock grows abundantly in this country, it is important that every physician should supply himself with it in the proper season, and prepare the extract as directed above, or preserve the leaves, which is easily done by drying them carefully, and excluding them from the light and air in close stopped jars.—I.

Extractum Eleterii. L. This substance spontaneously subsides from the juice of the wild cucumber, in consequence, I presume, of one of those series of changes which vegetable matter is perpetually undergoing, although we are hitherto unable to express them by any known chemical law. It is therefore not an *extract*, either in the chemical or pharmaceutical acceptation of the term, nor an *inspissated juice*, nor is it a *fecula*,* as it has been termed; the Dublin College has perhaps been more correct in simply calling it *Elaterium*, the name given to it by Dioscorides.

It occurs in commerce in little thin cakes, or broken pieces, bearing the impression of the muslin upon which it has been dried; its *colour* is greenish, its *taste* bitter, and somewhat acrid; and when tolerably pure, it is light, pulverulent, and inflammable.

The early history of this medicinal substance is involved in great perplexity, each author speaking of a different preparation by the same name; for instance, the *Elaterium* of Dioscorides must have been a very different substance from that of *Theophrastus*: and, wherever Hippocrates mentions the term, he evidently alludes to *any* violent purgative. "*Hippocrati Elaterium medicamentum est quod per alvum expurgat.* (*Bod: in Theophrast.*) This will, in some degree, reconcile the discordant testimonies of different authors, with regard to the powers of *elaterium*; for example, Dioscorides states its dose to be from grs. ii. to ℈j—in Ætius, Paulus, and Actuarius, it is recommended to the extent of ʒss—in Mesue from ℈ss to ℈j —in Bontius (*Med: Ind:*) from ℈j to ʒss—Massarias exhibits it in doses of grs. vj—Farnelius and Sennertus to ℈j—Herman from grs. v to vj—Quincy to grs. v—and Boerhaave does not venture to give more than gr. iv—while the practitioners of the present day limit their dose from gr. ½ to grs. ij. Dr. Clutterbuck, with a laudable intention to discover some method of procuring this article at a cheaper rate, and at the same time of establishing some process which might ensure a preparation of more uniform strength, has lately performed a series of interesting and instructive experiments,† the results of which prove in a satisfactory manner "that the active principle of this plant is neither lodged in the roots, leaves, flowers, nor stalks, in *any considerable quantity;* nor is it to be found in the body of the fruit itself, or in the seeds, but in *the juice around the seeds;* the substance which spontaneously subsides from this liquor, obtained without pressure, is *genuine* Elaterium, the quantity of which, contained in the fruit, is extremely small, for Dr. Clutterbuck obtained only six grains from *forty* cucumbers. This gentleman communicated the detail of these experiments to the President of the College of Physicians, who requested me, as professor of Materia Medica, to report upon them. I accordingly deemed it to be my duty to enter upon a series of new experiments, which I have lately completed, with the able assistance of Mr. Faraday, in the laboratory of the Royal Institution. The results of which will show, that although Dr. Clutterbuck found that an *eighth* part of a grain of elaterium seldom failed to *purge violently*, yet, strange as it may appear, that *not more than one grain in ten* of elaterium, as it occurs in commerce, possesses any active properties, and that this decimal part is a vegetable proximate principle, not hitherto noticed, to which I shall give the name of ELATIN. I shall subjoin the detail of my experiments, and I think it will appear that their results will authorize me to express the chemical composition of Elaterium in the following manner.

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* The juices of *Iris root*, *Arum root*, and *Bryony root*, and those of many other plants, allow their medicinal elements to separate and subside in a similar manner, leaving the super-natant liquid perfectly inert; if we must have a generic name to express such a substance, it should be termed a *feculence*, rather than a *fecula*.

† "*Observations on the nature and preparation of the Elaterium*," read at the Medical Society of London, April 24, 1819, and which were published in the Medical Repository, vol. xii. No. 67.

	F.	Water	·4
I.	B.	Extractive	2·6
	B.DJ	Fecula	2·8
	C.	Gluten	·5
	K.	Woody matter	2·5
	H.	*Elatin*	1·2
	G.	Bitter Principle	
			10 grains.

Proximate Analysis of Elaterium.

Experiments. Series 1st.

A.

Ten grains of Elaterium, obtained from a respectable chemist, and having all the sensible properties which indicated it to be genuine, were digested for twenty-four hours with distilled water, at a temperature far below that of boiling; *four grains* only were dissolved.

B.

The solution was intensely bitter, of a brownish yellow colour, and was not in the least disturbed by alcohol, although a solution of *Iodine* produced a blue colour; the solution therefore contained no gum, and only *slight traces* of starch.

C.

The solution, after standing twenty-four hours, yielded a *pellicle* of insoluble matter, which when burnt appeared to resemble *Gluten*.

D.

The six grains which were insoluble in water, were treated for forty-eight hours with alcohol of the specific gravity ·817, at 66° of *Fahrenheit;* a green solution was obtained, but by slow evaporation *only half a grain* of solid green matter was procured. The insoluble residue obstinately adhered to, and coated the filtre like a varnish, and completely defended the mass from the action of the alcohol; it is probable that it consisted principally of *Starch*.

Experiments. Series 2d.

E.

Ten grains of Elaterium, from the same sample, were treated with alcohol of the specific gravity ·817, at 66°. *Fah:* for twenty-four hours; upon being filtered, and the residuum washed with successive portions of alcohol, the Elaterium was found to have lost only 1·6 of a grain. The high specific gravity of the alcohol in this experiment was important; had it been lower, different results would have been produced.

F.

The alcoholic solution obtained in the last experiment, was of a most brilliant and beautiful green colour, resembling that of the oil of cajeput, but brighter; upon slowly evaporating it, 1.2 grains of solid green matter were obtained.

G.

The solid green matter of the last experiment was treated with boiling distilled water, when a minute portion was thus dissolved, and a solution of a most intensely bitter taste, and of a brownish yellow colour, resulted.

H.

The residue, insoluble in water, was inflammable, burning with smoke and an aromatic odour, not in the least bitter; it was soluble in alkalies, and was again precipitated from them unchanged in colour; it formed, with pure alcohol, a beautiful tincture, which yielded an odour of a very nauseous kind, but of very little flavour, and which gave a precipitate with water; it was soft, and of considerable specific gravity, sinking rapidly in water; circumstances which distinguish it from common resin; in very minute quantities it purges. It appears to be the element in which the purgative powers of the Elaterium are concentrated, and which I have denominated ELATIN.

I.

The residuum, insoluble in alcohol, weighing 8·4 grs. (*Expt.* E) was boiled in double distilled water, when 5·9 grs. were dissolved.

J.

The above solution was copiously precipitated *blue* by a solution of *Iodine*, and was scarcely disturbed by the *Persulphate of Iron*.

K.

The part insoluble, both in alcohol and water, which was left after Experiment I, amounted to 2·5 grains; it burnt like wood, and was insoluble in alkalies.

It appears that the whole of the *Elatin* does not separate itself from its native juice by spontaneous subsidence, and that on this account, the supernatant liquor possesses some powers as a cathartic. We cannot be surprised therefore that the Elaterium of commerce should be a very variable and uncertain medicine; for, independent of the great temptation which its high price holds out for adulterating it, which is frequently done with starch, it necessarily follows that where the active principle of a compound bears so small a proportion to its bulk, it is liable to be affected by the slightest variation in the process for its preparation, and even by the temperature of the season; where pressure is used for obtaining the juices, a greater or less quantity of the inactive parts of the cucumber will be mixed with the *Elatin*, in proportion to the extent of such pressure, and the *Elaterium* will of course be proportionally weak.* There is one curious result obtained in my experiments which deserves notice, *viz.* that there is a *bitter* principle in the Elaterium, very distinct from its extractive matter, and totally unconnected with its activity, for I diluted the solution obtained in experiment G, and swallowed it, but it produced upon me no effect, except that which I generally experience upon taking a powerful bitter,—an increased appetite; and yet, notwithstanding this fact, when in combination with *Elatin*, it is far from being inert, since this latter body is considerably quickened by its presence. See vol. 1, page 187. The solution B was given to a person, but no effect whatever ensued. *Dose* of good Elaterium, as it occurs in commerce, is about one grain, or it is better to give it only to the extent of half a grain at a time, and to repeat that dose every hour until it begins to operate. It is probably, when thus managed, the best hydragogue cathartic which we possess; it differs however from the class of remedies to which it belongs, for it excites the pulse and whole animal system, so as to produce a considerable degree of febrile action. It was strongly recommended by Sydenham, Lister, and Hoffman, and all their cotemporaries and immediate successors, as a valuable remedy in dropsy; but in consequence of some fatal results from its improper application, it was driven from practice with a violence that marks prejudice rather than conviction; one author in descanting upon its virulence, exclaims "*Elaterium esse in catalogo diaboli quo necat homines.*" For its restoration to medicine, we are indebted to Dr. Ferriar, of Manchester, who used it with great success in the cure of Hydrothorax.

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* When it has a dark green colour, approaching to black, is compact, and very heavy, and breaks with a shining resinous fracture, we may reject it as an inferior article.

Since the publication of my experiments upon the ordinary Elaterium of Commerce, I have been favoured by Mr. Barry with the results of his trials upon the Elaterium made by W. Allen & Co. according to the improved process of Dr. Clutterbuck; of the first sample, he found that out of ten grains, 5·5 were soluble in spirit of the specific gravity 809, of the second 6.2, and of the third 6·4; of that prepared by the same process at Apothecaries' Hall, 6 grs. were soluble. The residue, insoluble in the spirit, was administered to a patient, and ascertained to be perfectly inert. This report confirms beyond a doubt the great superiority of the Elaterium when prepared, *without pressure*, according to the suggestion of Dr. Clutterbuck.

Extractum (*Succus Spissatus.* E.D.) **Hyoscyami**, L. This preparation is certainly powerfully narcotic, and tends to relax rather than astringe the bowels; where the constitution is rebellious to opium, it furnishes a more valuable resource to the practitioner, than any other narcotic extract. *Dose*, gr. v. to ℈j in pills. *See Form:* 1, 3, 4, 19, 139.

Succus Spissatus Lactucæ Sativæ. E. This preparation has not yet found its way into the London Pharmacopœia; but as considerable interest has been excited with regard to its sedative properties, by the testimony of Dr. Duncan, and others, I may be allowed to introduce it in the present work. In the memoirs of the Caledonian Horticultural Society, various suggestions are offered as to the best mode of obtaining an extract from the milky juice of the garden Lettuce, to which Dr. Duncan has bestowed the name of "Lactucarium;" it was first recommended to take the milk with cotton, afterward with a sponge, and more recently with a painter's brush; all these methods however are attended with considerable difficulty, and the juice cannot be collected in any quantity. Mr. Probart, a chemist in Great Portland Street, has lately cultivated large plantations of the lettuce, for the purpose of instituting experiments upon the subject, and I am happy in being enabled, through his liberality, to introduce in this place an account of the process which he pursues, and which he considers the only one by which the article can be brought into the market at any reasonable price.*

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* "I have the Cos Lettuce planted about eight inches asunder in rows, between which there is sufficient space to enable persons to pass up and down without injuring the plants. I commence my operations just before the plant is about to flower, by cutting off an inch of the stem; the milky juice immediately exudes, and is collected on pieces of *Wove Cotton*, about half a yard square. As soon as this becomes charged, it is thrown from time to time into a vessel containing a small quantity of water, which when sufficiently impregnated is evaporated at the common temperature of the atmosphere, by exposure in a number of shallow dishes. The Lactucarium, in a few hours, is found adhering to the vessels in the form of an Extract, but differing from every other in all its sensible properties: this method enables me to collect Lactucarium with great facility and despatch, but it is still attended with considerable expense, as the proportion of milky product is necessarily very small, and the price of the medicine consequently high, and therefore not within the reach of general practice. This consideration led me to make farther

In concluding the history of Inspissated juices, it deserves notice that the London College uniformly directs that the *feculence* should be preserved in the compound: there can be no doubt of the propriety of such advice, but the Colleges of Edinburgh and Dublin reject it. The French Codex gives directions for two extracts from each of these substances, one containing what they please to denominate the *fecula*, the other not; thus there is "*Extractum Cicutæ absque Fecula*," and "*Extract: Cicut: cum Fecula.*" There is one curious fact respecting these *narcotic* preparations, that most, if not all of them, contain *nitre*, *common salt*, and *muriate of potass*.

Manufacturing chemists, in order to give a smooth and glossy appearance to their Extracts, generally add to every ℔j, about ℥ss of gum, ʒj of olive oil, and ♏xx of rectified spirit: there is no harm in the practice.

FERRI SUB-CARBONAS. L. CARBONAS FERRI PRÆCIPITATUS. E. CARBONAS FERRI. D.

Carbonate of Iron.

In the former Pharmacopœia of London, a sub-carbonate of iron was prepared, under the name of *ferri-rubigo* (rust of

experiments, for the purpose of ascertaining whether an EXTRACT might not be obtained from the plant possessing all the properties of Lactucarium, when administered in larger doses, and which could be introduced at a comparatively trifling cost. In prosecuting this inquiry, I found that the plants contain most of the milky juice when they have flowered and the leaves are beginning to assume a yellow hue, and I observed that when cut down, the milky juice assumes for the most part a concrete form, having subsided in the bark of the stalk and in the old leaves, a circumstance which accounts for the extreme bitterness of these parts. I was naturally led from these circumstances to choose the above period for my operations, and to select those parts only of the plant for my extract, rejecting the substance of the stalk, and the young sprouts. My method of procuring the extract is as follows. I first macerate the parts in water, for twenty-four hours, and then boil them for two, after which I allow the clear decoction to drain through a sieve, without using any pressure; this is then evaporated, as far as it can be done with safety, and the process is finished in shallow dishes, in the manner above described, for obtaining Lactucarium. This extract, which I have called "EXTRACTUM LACTUCÆ CONCENTRATUM," is of course less powerful than *Lactucarium*, but it possesses all the properties in larger doses, and it has been found equally useful in a number and variety of cases, and is not more than a sixth part of the price."

The "*Succus Spissatus Lactucæ sativæ*," of the shops, must of necessity be almost inert, since it is commonly prepared at that period, when the plant contains none, or very little of the milky juice; and even if the Lettuce be employed at a more mature season, it must still fail to afford an extract of any strength, as it is merely the expressed juice, and that too of *the whole plant* indiscriminately, and will be found to contain a very minute proportion of *Lactucarium*, the great bulk being nothing more than inspissated green juice.

iron,) by exposing iron filings to the action of air and water; and although the Colleges of Edinburgh and Dublin still retain this mode of preparation, yet they admit at the same time of another which, like the *sub-carbonate* of the present London Pharmacopœia, is produced by precipitation. QUALITIES. *Form*, a chocolate brown powder. *Odour*, none. *Taste*, slightly styptic. CHEMICAL COMPOSITION. Mr. Phillips has shown that this precipitate is liable to vary, according to the temperature at which it is prepared, as well as from other differences of manipulation; it consists of mixtures of peroxide, protoxide, and sub-carbonate of protoxide of iron, in various proportions. SOLUBILITY. It is insoluble in water, but acids dissolve it with effervescence. FORMS OF EXHIBITION. In powder or pills, combined with aromatics. DOSE, gr. v to xxx. (*Form.* 38.) It has lately been brought into particular notice by the publication of Mr. Hutchinson of Southwell, who states that in doses of half a drachm to a drachm, two or three times a day, it has proved in his hands a most efficacious remedy in the cure of *Tic douloureux*. Mr. Hutchinson is well known to the profession as a judicious and inquiring practitioner, and we are well satisfied that he would not recommend any remedy to the attention of his brethren, without a well-grounded assurance of its efficacy.

FERRI RAMENTA ET FILA. L. FILA ET LIMATURA. E. FERRI SCOBS. D.

Iron Filings and Wire.

Iron seems to be a metal that proves active in its *metallic* state; its filings may be given in the form of powder, conjoined to some aromatic, or what is perhaps more eligible, in the form of an electuary. The Mahometan practitioners are in the habit of prescribing them, in conjunction with ginger, and cummin seeds, in cases requiring tonics. DOSE, grs. v to ʒss. IMPURITIES. Iron filings should be carefully purified by the application of the magnet, since those obtained from the workshops are generally mixed with copper and other metals. For pharmaceutical purposes, iron wire should be preferred, as being the most pure, since the softest iron only can be drawn, and Mr. Phillips has shown us, in his experiments upon the "*Ferrum Tartarizatum*," that soft iron is more easily acted upon by Tartar.

FERRI SULPHAS. L. Sulphas Ferri. E.D.

Ferrum Vitriolatum. P.L. 1787. Sal Martis. P.L. 1745.
Sal, seu Vitriolatum Martis. P.L. 1720.
Sulphate of Iron, formerly *Green Vitriol*.

Qualities. *Form*, crystals, which are rhomboidal prisms, transparent, and of a fine green colour; when exposed to the air they effloresce, and at the same time become covered with a yellow powder, owing to the attraction of oxygen; when exposed to heat, they undergo watery fusion, and at a higher temperature, the acid is driven off, and the peroxide of iron alone remains, which in commerce is known by the name of *Colcothar*. Chemical Composition. According to Dr. Thomson, it consists of 27·7 of sulphuric acid, 28·3 of protoxide of iron, and 45 of water; 8 parts, however, of this water, exist in combination with the oxide of iron. Solubility. It is soluble in two parts of water at 60°, and three-fourths at 212°. The solution reddens vegetable blues. It is insoluble in alcohol; when however the iron is farther oxidized, it becomes soluble in that menstruum. Incompatible Substances. Every salt whose base forms an insoluble compound with sulphuric acid; *the earths, the alkalies, and their carbonates; borate of soda; nitrate of potass, muriate of ammonia; tartrate of potass and soda; acetate of ammonia; nitrate of silver; subacetate and acetate of lead; and Soaps*. Whether the medicinal virtues of a salt of iron are injured by combination with astringent vegetable matter, seems to admit of doubt. Such substances have been usually ranked among the *incompatibles*, but I am disposed to think without sufficient grounds, for I have frequently witnessed the salutary effects of iron when exhibited in this questionable state of combination—may not the absorbents be more disposed to take up iron, when combined with vegetable matter, than when it is presented in a more purely mineral form?* Med. Uses. Tonic, astringent, emmenagogue, and anthelmintic; in large doses, it occasions griping in the bowels. Dose, gr. j to v, combined with rhubarb, or some bitter extract. (*Form:* 72, 87.) If given in

* By a parity of reasoning, Mr. Carmichael is led to prefer the *phosphate of iron* to any other preparation of that metal, in cancer, because he thinks iron, combined with an animal acid, enters the system in greater quantity, and unites more intimately with the juices.

Aromatic Lozenges of Steel. These consist of sulphate of iron, with a small proportion of the tincture of *Cantharides*.

solution, the water should be previously boiled, or the oxygen contained in the atmospherical air, which is diffused through it, will partially convert the salt into an *oxy*-sulphat, and render it insoluble. Off. Prep. *Mist : Ferri comp :* (℞) L. *Pil : Ferri comp :* (℈) L.

FERRUM AMMONIATUM. L. Murias Ammoniæ et Ferri. E.D.

Ferrum Ammonicale, P.L. 1787. *Flores Martiales. P.L.* 1745. *Ens Veneris. P.L.* 1720.

Qualities. *Form*, crystalline grains, which deliquesce; *Colour*, orange yellow; *Odour*, resembling that of saffron; *Taste*, styptic. Chemical Comp : This is a very variable composition; depending upon the degree of heat and length of time employed for its preparation. It seems to be a mixed mass, consisting of sub-muriate of ammonia and sub-muriate of iron, the metal being in the state of red oxide; and, Mr. Phillips states that in the London preparation a portion of sub-carbonate of ammonia is necessarily present. Solubility, f℥j of water dissolves ʒiv of it; it is also very soluble in alcohol. Med. Uses. It is tonic, emmenagogue, and aperient, but it is so uncertain in its composition and effects that it is rarely used. Officinal Prep : *Tinct : Ferri Ammon :* L. *Form :* 36, 43, 95. Impurities. These are indicated by the dull and pale yellow colour of the salt; it may be purified by re-subliming it.

FERRUM TARTARIZATUM. L. Tartras Potassæ et Ferri. E. Tartarum Ferri. D.

Qualities. *Form*, a powder of a brownish green colour; *Odour*, none; *Taste*, slightly styptic; it attracts humidity from the atmosphere, but does not deliquesce. Chemical Composition. Mr. Phillips has devoted much attention to this subject, and he states that as it is frequently prepared, it is a mere mixture of metallic iron with super-tartrate of potass, coloured by oxide of iron; when however it is made with more care, a chemical compound results which is either a triple salt, or one of those combinations which cream of tartar forms with metals, and of which I have spoken under the article *Antimonium Tartarizatum*. Solubility. It is very soluble in water, and the solution remains for a great length of time without undergoing any change, except that of depositing *tartrate of lime*, which is an incidental impurity in the supertartrate of potass. Incompatible Substances. *All strong acids; lime water; hydrosulphuret of potass; astringent vegetables? The fixed alkalies and their carbonates* decompose the solution very slowly, unless heated; but *ammonia* and its *sub-carbonate* produce upon it no effect whether it be hot or cold; this fact, observes Mr. Phillips, will enable us to exhibit iron in solution with an alkali, without the occurrence of any precipitate. Forms of Exhibition. The perfect preparation, from its tendency to deliquesce, cannot be well ordered in the form of powder; that of solution is probably the most judicious. It is supposed to add to its chalybeate virtues those of a diuretic nature. Dose, grs. x to ʒss. See *Form*: 34, 53, 92.

FILICIS RADIX. L.E.D. (Asphidium Filix, *Mas*.)
Root of the *Male Fern*.

Qualities. This root is nearly inodorous; its taste slightly bitter, sweetish, sub-astringent, and mucilaginous; as it contains no volatile ingredient, it may be given in decoction, but on account of its astringency, it must not be conjoined with a *chalybeate*. Dose, as an anthelmintic, ʒj to ʒiij, followed by a cathartic; its use however is superseded by more powerful and certain vermifuges. this root is sometimes boiled in ale to flavour it.

FRASERA WALTERI. *Mx. I.* 96. *Bn. II.* 103. *Radix.*
American Columbo. The Root.

Specific Character. An indigenous plant growing in the low grounds of the middle, western, and southern States, but most abundantly in Missouri, and in the Arkansas Territory. *Stem*, erect, from six to eight feet high: *leaves* glabrous, verticillate, opposite; flowers in June and July. Sensible Properties. In appearance, when cut transversely and dried, this root resembles the imported Columbo; *taste*, bitter and sweetish. Chemical Composition. *Bitter extractive* and a small proportion of *resin*. Solubility. Alcohol and proof spirit partially extract its virtues, but water is its best solvent. Medical Use. For a while after this article was introduced to professional notice, it was regarded as one of the most valuable acquisitions that had been made to the list of American bitters and tonics, and by many, it was thought a substitute which would supersede the use of the East India Columbo. This led me to perform a series of comparative experiments for the purpose of ascertaining their analogy. I came to the conclusion that they differed materially, both in their chemical composition and medicinal character. There is nothing to justify comparison but the size and shape of the roots. After having frequently prescribed the American Columbo during four or five years, I cannot but think it inferior to a great number of our indigenous tonics, and altogether unworthy of the high reputation which some writers have given to it. It is with deference to their opinions, however, that it is here introduced. Let those who would be informed from personal observation of the comparative merits of the imported and indigenous Columbo, be careful to select Ceylon Columbo which shall be unadulterated by the American species, and which has not been injured by insects or by age. The fresh root of the Frasera acts as emetic and cathartic.

Dose of the powdered root in substance, from ʒss to ʒij; of the infusion, made by pouring oj of boiling water upon ℥ss of the bruised root, from ℥i. to ℥ij.—I.]

GALBANI GUMMI RESINA. L.E.D.

Galbanum.

Qualities. *Form*, variegated masses, of a yellowish brown colour; *Odour*, fetid; *Taste*, bitter and acrid. Chemical Composition. It is one of those vegetable products to which the name of *gum-resin* has been given, *see Elemi*. The latest analysis of galbanum by M. Meisner, affords the following results, Resin 65·8; Gum 22·6; Cerasin 1·8; Malic acid 0·2; Volatile oil 3·4; Vegetable Debris 2·8; loss 3·4. Solubility. Water, wine, and vinegar, by trituration, take up one-fourth of its weight, and form a milky mixture which is deposited by rest; a permanent suspension, however, may be effected by the intermedium of egg or of gum arabic, for which purpose the galbanum will require half its weight of gum. Alcohol takes up one-fifth of its weight, and a golden yellow tincture results, which has the sensible qualities of the galbanum, and becomes milky on the addition of water, but no precipitate falls. A mixture of two parts of rectified spirit and one of water, will dissolve all but the impurities. By distillation, galbanum yields half its weight of volatile oil, which at first has a blue colour. **Med. Uses.** It is an antispasmodic, expectorant, and deobstruent, and in a medical classification, might be placed between ammonia and assafœtida. **Forms of Exhibition.** No form is preferable to that of pill. **Officinal Prep.** *Pil. Galbani comp.* L. *Pil. Assafœtid. comp.* (B) E. *Pil. Myrrh. co.* D. *Tinct. Galb.* D. *Empl. Galb.* D. *Emplast. Galb. co.* L. *Emplast. Assafœtid.* (B) E. *Emplast. Gummos.* E.

GALLÆ. L.E.D.

(Cynips Quercus folii *Nidus.*) *Gall Nuts.*

Qualities. *Form.* Excrescences, nearly round and of different magnitudes, smooth on the surface, but with studded tuberosities; they are heavy, brittle, and break with a flinty fracture. *Odour,* none; *Taste,* bitter and very astringent. **Solubility.** The whole of their soluble matter is taken up by forty times their weight of boiling water. Alcohol, by digestion, dissolves .7, and æther .5 of their substance. The watery infusion possesses all the properties of the gall-nut, and reddens vegetable blues. **Chemical Composition.** Is at present involved in some obscurity; it contains tannin, gallic acid, a concrete volatile oil, and perhaps extractive and gum. M. Braconnot has also lately discovered in the gall-nut a new acid, which he calls *Ellagic acid,* from the word *galle* reversed, a nomenclature which it must be confessed is at least free from the objections urged against that which is founded upon chemical composition. (*See Annales de Chimie,* vol. ix. p. 187, *new series; also Children's Essay on Chemical Analysis, p.* 276.) **Incompatible Substances.** The infusion and tincture of galls possess habitudes with which it is very important for the medical practitioner to be acquainted, not only for the purposes of directing their exhibition with success, but because the elements which impart to them their characteristic traits, viz. *Gallic Acid* and *Tannin,** are very widely diffused through the products of the vegetable kingdom, and will be found to be constantly active in their chemical, medicinal, and pharmaceutical applications. Metallic salts, especially those of iron, produce precipitates with infusion of galls, composed of tannin, gallic acid, and the metallic oxide; of these compounds the *tanno-gallate of iron* is the most striking, being of a black colour; those of *sub-acetate* and *acetate of lead* are grayish; *tartarized antimony* produces a yellowish; *sulphate of copper* a brown; *sulphate of zinc* reddish black; *nitrate of silver*, a deep olive; and *nitrate of mercury*, a bright yellow precipitate; *the oxy-muriate of mercury* produces only an opacity. *Sulphuric acid* throws down a yellowish curdy precipitate, *muriatic* a flaky and white one, and *nitric acid* merely modifies the colour of the infusion, although it destroys its astringency; the solution of *ammonia* occasions no precipitate, but renders the colour deeper, the *carbonate* however throws down a precipitate; the carbonates of the *fixed alkalies* produce a yellowish flaky, and *lime water* a copious deep green precipitate. The *tannin* in the infusion of galls is precipitated by a solution of isinglass, or of any other animal jelly, by that of starch, and by many metallic oxides. MEDICAL USES. Galls are most powerfully astringent. The native practitioners of India not only administer them as astringents in dysentery, but as tonics in cases of intermittent fever. FORMS OF EXHIBITION. In that of powder; and in combination with other astringents (*Form.* 51,) or with aromatics and bitters. As a local remedy the gall-nut enters into gargles and injections; for *blind* piles, an ointment composed of 2½ parts of finely powdered galls, and a small proportion of opium, with three parts of simple ointment as an excipient, offers a very valuable resource. (*Form.* 55.) In some cases of hemorrhoids, prolapsus ani, and fluor albus, the application may be made in the form of a fomentation, for which purpose two drachms of bruised galls should be macerated for an hour in a pint of boiling water, which, when cold, may be used in the usual manner. DOSE, for internal exhibition, grs. x to ℈j, or more. OFFICINAL PREP. *Tinct. Gallarum.* E.D. OBSERV. Those which are small, protuberant, bluish, and heavy, are the best, being such as have been collected before the *larvæ* within them had changed to the state of fly, and eaten their way out; a white, or a red hue indicates an inferior quality, and are those from which the insect has escaped. Aleppo galls are the most valuable, as being the most astringent.

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* Seguin first proved that gallic acid, and tannin or the astringent principle, are different substances; it is to the former that the property of giving a black colour to the solutions of iron is owing.

Mr. Hatchett has shown that *tan* or *tannin* may be artificially produced by the action of nitric acid upon various vegetable substances.

GENTIANÆ RADIX. L.E.D.

(Gentiana Lutea, *Radix.*) *Gentian Root.*

QUALITIES. *Form*, wrinkled pieces of various length and thickness; *Odour*, not particular; *Taste*, intensely bitter, but not nauseous. Chemical Composition, resin, a small portion of oil, bitter extractive, and a proportion of tannin; it contains also mucilage, in consequence of which the infusion frequently becomes ropy. Since the last edition of this work, the contitental chemists have announced the existence of an alkaline principle, which they call *Gentia* or *Gentiania*, and which is said to concentrate within itself, all the virtues of the Gentian root; it does not appear to be in the least poisonous; *M. Majendie* has injected it into the veins without any obvious effects, and has himself swallowed two grains without experiencing any sensation but that of extreme bitterness, followed by gentle warmth in the region of the stomach. The root, moreover, contains saccharine matter, for when fermented with water, it yields a spirit which is extensively used by the Swiss. Solubility. The virtues of this root are extracted by water and alcohol; proof spirit is perhaps its most perfect menstruum. See *Infus. Gentian. comp.* Medical Uses. It is tonic and stomachic, and its use for such purposes is of ancient date;* in dyspepsia, hysteria, and in all cases where a vegetable matter is indicated, it will be found a serviceable remedy. Dose, in substance, from grs. x. to ʒj. Officinal Prep: *Extract: Gentian.* L.E.D. *Infusum Gentinæ comp.* L.E.D. *Tinct. Gentian comp.* L.E.D.† *Vinum Gentianæ compositum.* E.

GERANIUM MACULATUM.

W. III. 705. *Bw. I.* 84. *Bn.* 1. 149. *Radix.*

Cranesbill. Crow-foot Geranium. The Root.

Specific Character. Erect: pubescence reversed; stem dichotomous: leaves opposite, three or five parted, upper ones sessile: peduncle three flowered: petals obovate. It grows in almost every part of the United States, by the sides of fences, in meadows and woodlands, rising to the height of fifteen or twenty inches. Flowers in May and June. Sensible Properties. The *appearance* of the root is somewhat like that of Polygala Senega, being large, tortuous, and rough; *taste*, actively astringent but not unpleasant. Chemical Composition. Tannin appears to be the most important constituent. It is *soluble* in proof spirit and in water. Medical Use. It is a very pure pleasant and valuable astringent, not less so than any other article peculiar to this country, and little inferior to Kino. It is a better tonic than Kino, and is therefore preferable to it in the treatment of morbid fluxes connected with relaxation and debility. The infusion is a valuable lotion in the treatment of unhealthy ulcers, and forms one of the best injections in lucorrhœa, gleet and passive hæmorrhage. In ulcerations and aphthous sores of the mouth and throat, the decoction may be very advantageously used as a gargle. Medicinal Preparations. The powdered root, tincture, decoction, infusion, and extract. Doses ℥ss of the powder, ʒij of the tincture, ℥j to ℥ij of the infusion and decoction, and 10 gr. extract.

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* It takes its name from Gentius, king of Illyria, its discoverer, who was vanquished by Anicius the Roman Prætor, A.U. 585. i.e. A.C. 167, so that it is neither to be found in Hippocrates nor Theophrastus.

† Brodum's Nervous Cordial consists of the tinctures of *Gentian, Calumba, Cardamom,* and *Bark,* with the *Compound Spirit of Lavender,* and *Wine of Iron.*

Stroughton's Elixir. Is a tincture of *Gentian,* with the addition of *Serpentaria, Orange Peel, Cardamoms,* and some other *aromatics.*

GEUM RIVALE.

W. II. 1115. *Radix.*

Water avens. Chocolate-root. The Root.

Specific Character. Stem simple: radical leaves interruptedly pinnate, cauline ones three-cleft; flowers nodding; petals of the length of the calyx, awns plumose, nakedish above, a little hooked. It grows in low marshy lands, common to Europe and America. Sensible Properties. The *taste* of this root is actively astringent, somewhat bitter, but not enough so to render it unpleasant; *Colour*, reddish or purple; *Texture* hard and brittle, so that it is easily pulverized. Solubility. Its virtues are readily yielded to boiling water. Medicinal Qualities. An excellent tonic and astringent. Its use appears to have been hitherto principally limited to the eastern and northern States. In Connecticut it is so highly estimated as a tonic, that in some parts of the State, it has, in a great measure, superseded the use of the Peruvian Bark. Although there is abundant evidence of its tonic virtues from its having been often successfully employed in the treatment of intermittent fevers, still it is certainly much less active, and is less stimulating than cinchona. It has perhaps the least tendency of all vegetable tonics to increase excitement, and hence it has been found highly serviceable in phthisis pulmonalis, and in hæmoptysis. A weak decoction, in the quantity of a pint a day, may be taken with benefit in these diseases, when they are accompanied with so much excitement as to require the frequent use of the lancet. In dyspepsia and in the numerous visceral affections secondary to that disease, the long-continued use of the decoction of Avens root has many times appeared to restore to health the most enfeebled and shattered constitutions. In complaints like these, it has long been a popular domestic remedy in Connecticut, and drunk with milk and sugar, as a substitute for tea and coffee. It is not unpleasant to the taste, and of its salutary effects there can be no question. Doses of the powdered root gr. xv to ℈j three times a day; the decoction prepared by boiling ʒij of the root in oj of water may be taken to the extent of a pint a day.

GILLENIA TRIFOLIATA. *Bw. II.* 10. *Bn. I.* 65. } *Radix.*
SPIRÆA TRIFOLIATA. *W. II.* 1063.

Gillena. Indian physic. Bowman's root. The Root.

Specific Character. Leaves ternate, lanceolate, serrate, nearly equal; stipules linear, entire: flowers, terminal, in loose panicles. Calyx, bell-tubular. Styles five. Grows in all the southern, northern, and middle States; most commonly on dry, hilly woodlands; about two feet high; flowers in June and July: root perennial. Sensible Properties. The root, the part of the plant now to be considered, is in shape irregular, tuberous or knobby, giving off many slender fibres: *Odour*, none: *Taste*, bitter but not unpleasant. Chemical Composition and Solubility. Bitter extractive and red colouring matter, which are imparted to water, a large proportion of resinous matter, soluble in alcohol. Medical Use. Drs. Bigelow and Barton both represent this root as pretty actively emetic, similar in its operation to the imported Ipecac. Professor Chapman remarks, that "many country practitioners place so much confidence in it that it has nearly superseded the ipecacuanha in their hands," and adds, "enough I have seen to convince me of its powers to excite vomiting effectually."* Dr. Eberle also observes, "from my own experience with this plant, which has not been inconsiderable, I am led to regard it as very little inferior to the officinal ipecacuanha as an emetic. Like this latter article it is a safe and efficacious vomit. While practising in Lancaster county, I employed this plant very frequently as an emetic, in the treatment of intermittent and bilious fevers, and it very seldom disappointed me of the desired effect."† Another proof of its acknowledged value is its being introduced into the primary catalogue of medicines in the American Pharmacopœia. Notwithstanding this testimony in favour of its medicinal virtues, a series of experiments, by Charles Baum, M.D. are published in a late number of the Philadelphia Journal of the Medical and Physical sciences, which conclusively prove the *Gillenia* to be, at least that used by him, nearly if not quite inert. He employed the corticle part of the root of the cultivated plant.* The fide lity of Dr. B.'s experiments are not questioned, but it is more easy to imagine that their unexpected results might have been owing to fallacious circumstances connected with them, than it is to reject the positive testimony which has been cited. I have been disappointed in not procuring a sufficient quantity of the fresh root to test its qualities by a more extensive trial. It should be collected for use in September or October. Dose, from ℈j to ʒss of the powdered root.—I.]

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* Elements of Therapeutics vol. 1. page 146. 2d edition.

† Treatise on Materia Medica and Therapeutics, vol. 1. page 67.

GLYCYRRHIZÆ RADIX. L.E.D.

(Glycyrrhiza Glabra.)

Liquorice Root. Stick Liquorice.

Qualities. *Taste*, sweet and mucilaginous. Chemical Composition: Gum, with a peculiar modification of saccharine matter (*Glycion*,) or sugar in its purest form, for it is not fermentable; on which account it is added to beer for the purpose of imparting a sweet taste, and at the same time enabling it to keep better. Solubility. Water extracts both its principles, but by long coction it becomes bitter; alcohol extracts only its saccharine matter. Medical Uses. It is principally employed as a demulcent in combination with other mucilaginous vegetables; the root will yield nearly half its weight of extract. Liquorice covers the taste of some unpalatable medicines more effectually than any other substance. Officinal Prep. *Decoct: Sarsaparill: comp:* (⊕, L.D. *Infus: Lini*, (⊠) L. *Extract: Glycyrrhizæ*. L.E.D. *Confectio Sennæ*, (⊕)† L.E. Adulterations. The powdered root is generally sophisticated with flour, and sometimes with powdered guaiacum; the fraud may be detected by its colour being a fine pale, instead of a brownish yellow, and by its reduced or foreign flavour.

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* See page 85. vol. 1. of this work.

† Pectoral Balsam of Liquorice. The proprietor of this nostrum gravely affirms that f℥iss contains the virtues of a *whole pound* of Liquorice root; but upon investigation it will be found to consist principally of *Paregoric* Elixir, very strongly impregnated with the *Oil of Aniseed*.

GRANATI CORTEX. L.E.D.

Punica Granatum. *Pomorum Cortex.*
Pomegranate Bark.

What has been said respecting the Gall-nut applies with equal truth to this substance. The efficacy of the bark of the root of the Pomegranate, says Dr. Ainslie (*Mat. Med. of Hindostan,*) as a remedy for the tape-worm, is now well established in India; it is given in decoction, prepared with two ounces of the fresh bark, boiled in a pint and a half of water until only three-quarters of a pint remain.

GUAIACI RESINA ET LIGNUM. L.E.D.

(Guaiacum Officinale.)
The Resin and Wood of Guaiacum.

A. The Wood.

Qualities. This wood is heavier than water, and emits when heated an aromatic odour; *Taste*, bitterish and sub-acrid; to extract its virtues long decoction is required. It has enjoyed great reputation as a specific in the venereal disease; it was imported into Europe in 1517, and gained immediate celebrity from curing the celebrated Van Hutten: long before this period, however, it was used by the natives of St. Domingo. Boerhaave, so late as the eighteenth century, maintained its specific powers. It seems probable that the discipline which always accompanied its exhibition, such as sweating, abstinence, and purgation, might be the means, in the warmer climates, of effecting cures which were attributed to the guaiacum. Officinal Prep: *Decoct: Guaiaci comp:* E. *Decoct: Sarsaparill: comp:* L.D.

B. The Guaiac, or *Resin.*

Qualities. *Form;* it has the aspect of a gum-resin; *Colour*, greenish brown; it is easily pulverized, and the powder, which is at first gray, becomes green on exposure to air and light, which appears to depend upon the absorption of oxygen: when heated, it loses its colour; it melts by heat; and has a *sp. grav:* of 1·2289. Solubility. *Water* dissolves out of it about 9 per cent. of extractive matter; *alcohol*, 95, and *æther* 40 parts in a hundred. The *alkaline* solutions and their *carbonates* dissolve it readily; *Sulphuric Acid* dissolves it with scarcely any effervescence, and affords a solution of a rich claret colour; *Nitric Acid* dissolves it with a copious extrication of nitrous fumes; *Muriatic Acid* dissolves a small portion only; but in all these cases the guaiacum is decomposed; the acids are therefore incompatible with it. Chemical Composition. The experiments of Mr. Hatchett demonstrate that it is a substance *sui generis*, and not a resin, or gum-resin. Med. Uses. Stimulant, diaphoretic,* and in large doses, purgative. Forms of Exhibition. In that of bolus; or diffused in water, by means of one half of its own weight of gum arabic. Dose, gr. x to ʒss. Officinal Prep: *Mist: Guaiac:* L. *Tinct. Guaiac.* L.E.D. *Tinct. Guaiac. Ammoniat.* L.E D. *Pulv. Aloes comp.* (𝕮𝕸) L.D. Adulterations. *Common resin*, may be detected by the turpentine emitted when the guaiac is thrown upon hot coals; *Manchinal gum*, by adding to the tincture a few drops of sweet spirit of nitre, and diluting with water; the guaiac is thus precipitated, but the adulteration flows in white striæ.

HÆMATOXYLI LIGNUM. L.E.D.

(Hæmatoxylon Campechianum.) *Logwood.*

Qualities. The wood is hard, compact, and heavy. *Odour*, none; *Taste*, sweet, and astringent; *Colour*, deep red. Chemical Composition. The colouring matter of this wood has been very recently submitted to a rigid examination; and the name of *Hematin* has been given to it; it affords small brilliant crystals of a reddish white colour, and slightly astringent, bitter, and acrid flavour; sulphuretted hydrogen passed through its solution in water, gives it a yellow colour, which disappears in a few days. Gelatine throws it down in reddish flakes. The habitudes of Logwood are curious with respect to mutability of colour. The recent infusion, made with distilled water, is yellow, but that with common water has a reddish purple colour, which is deepened by the alkalies, and changed to yellow by the acids; various salts precipitate it; *acetate of lead; alum; the sulphates of copper and iron; tartarized antimony; and sulphuric, muriatic, nitric, and acetic acids*, are on this account incompatible with it. MED. USES. It is supposed to be astringent, and is therefore given in protracted diarrhœas, and in the latter stage of dysentery. OFFICINAL PREP. *Extract. Hæmatoxyli.* L.

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* The Chelsea Pensioner. An empirical remedy for the rheumatism is well known under this name; it is said to be the prescription of the Chelsea Pensioner, by which Lord Amherst was cured; the following is its composition—*Gum Guaiac:* ʒj—*Powdered Rhubarb:* ʒij—*Cream of Tartar* ℥j—*Flowers of Sulphur* ℥ij—*One Nutmeg* finely powdered; made into an Electuary with one pound of *Clarified Honey*. Two large spoonsful to be taken night and morning.

Walker & Wessel's Jesuit Drops. This is nothing more than the *Elixir Anti-venereum* of Quincey, consisting of *Guaiacum*, *Balsam of Copaiba*, and *Oil of Sassafras*, made into a Tincture by Spirit.

Hatfield's Tincture. Guaiac and Soap, equal parts, ʒij—Rectified Spirit oiss.

Hill's Essence of Bardana. Guaiac ℥j—Spirit f℥iij.

HELLEBORI FŒTIDI FOLIA. L.

(Helleborus Fœtidus.) HELLEBORASTER. D.

The Leaves of Fœtid Hellebore.

As this plant is merely retained in the list of materia medica on account of its anthelmintic properties, it might be well dispensed with, since we possess many others which are much more safe as well as more efficacious.

HELLEBORI NIGRI RADIX. L.E.D.

*The Root of Black Hellebore. Melampodium.**
Christmas Rose.

QUALITIES. The fibres of the root are the parts employed; they are about the thickness of a straw, corrugated, externally of a deep dark colour, hence the epithet *black;* internally white, or of a yellowish hue. *Odour*, unpleasant; *Taste*, bitter and acrid. CHEMICAL COMPOSITION. An analysis of this root has lately been effected by M. M. Feneulle and Capron, from which it appears that its active principle, unlike that of the White Hellebore (*Veratrum*) is not an alkali; the following substances enter into its composition, viz. 1. A Volatile Oil.—2. A Fatty matter.—3. A Resin.—4. Wax.—5. A Volatile Acid.—6. A bitter principle.—7. Mucus.—8. Alumina.—9. Gallate of Potass.—10. Acidulous Gallate of Lime.—11. A Salt, with an Ammoniacal base. SOLUBILITY. Both water and alcohol extract its virtues, but the spirituous solution is the most active; long coction diminishes its powers, hence the watery extract acts more mildly than the root. MED. USES. It is a drastic cathartic, and proves therefore emmenagogue, and hydragogue. Forms of Exhibition. It is seldom given in substance, but in the form of tincture or extract; or in that of decoction, made with two drachms of the root to a pint of water. Dose of the powdered root, grs. x to ℈j; of the decoction, f℥j. Officinal Prep. *Tinct. Hellebori Nigri.* L.E.D. *Extractum Hellebori Nigri.* E.D. Adulterations. The roots of the poisonous aconites are often fraudulently substituted; this is easily discovered, for the aconite is lighter coloured than the palest specimens of black hellebore; it is safe therefore to choose the darkest.

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* MATTHEW'S PILLS,—STARKEY'S PILLS. Of the Roots of *Black Hellebore, Liquorice*, and *Turmeric*, equal parts, *purified Opium, Castille Soap*, and *Syrup of Saffron*, the same quantity, made into pills, with *Oil of Turpentine*.

HORDEI SEMINA. L.E.D.

(Hordeum Distichon. *Semina, tunicis nudata.*)

Hordeum Perlatum. *Pearl Barley.*

Barley is formed into *Pearl Barley*, by the removal of its husk or cuticle, and afterward by being rounded and polished in a mill. These well-known granules consist chiefly of fecula, with portions of mucilage, gluten, and sugar, which water extracts by decoction, but the solution soon passes into the acetous fermentation; the bran of barley contains an acrid resin, and it is to get rid of such an ingredient that it is deprived of its cuticle. Officinal Prep. *Decoct. Hordei.* L.E.D. *Decoct. Hord. comp.* L.D.

HUMULI STROBILI. L.E.

(Humulus Lupulus. *Stroboli Siccati.*)

Qualities. *Odour*, fragrant, and sub-narcotic; *Taste*, bitter, astringent, and aromatic. Chemical Composition. Dr. A. W. Ives, of New-York, has shown that the characteristic and valuable properties of the hop reside exclusively in a substance forming not more than one-sixth part of their weight, and which is easily separable from it by the mechanical processes of threshing and sifting. To this substance he has given the name of *Lupulin.* It is an impalpable yellow powder, peculiar to the female plant,* and is probably secreted by the Nectaria. From various experiments made on it, Dr. Ives arrived at the conclusion that *Lupulin* contains a very subtile *Aroma*, which is yielded to water and to alcohol, and which is rapidly dissipated at a high temperature, but that "*no essential oil can be detected by distillation in any part of the Hop.*" That the Lupulin moreover contains Gallic acid and Tannin; an extractive matter which is soluble only in water, and a bitter principle, which is soluble in *both** alcohol and water, and a Resin, in which the narcotic property of the hop exclusively resides. The following is the more accurate expression of its composition.

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* The common domestic Hop is invariably the female plant; that which bears the male flowers is not cultivated, and is called the *wild* hop. The researches of Dr. Ives show the importance of this distinction.

Tannin	5 grs.	Wax	12 grs.
Extractive . . .	10	Resin	36
Bitter principle . .	11	Lignin	46
			120

This fact, with respect to the residence of the properties of the hop in the yellow grains scattered over its scales, has been since confirmed by the observations of M. Payen and A. Chevalier, who have moreover detected a volatile oil in the Lupulin, amounting to 2 per cent. This oil is similar in odour to the hop, but much more penetrating, narcotic, and very acrid in the throat. The oil appears to have escaped the notice of Dr. Ives, from the fact of its being very volatile, and, to a great extent, soluble in water.

SOLUBILITY. Boiling water, alcohol, and æther, extract their virtues; but their aromatic flavour is destroyed by decoction; like most vegetable bitters, the cold is more grateful than the warm infusion; its colour is deepened by alkalies, and rendered turbid by the mineral acids; metallic salts also produce decomposition. MED. USE. Hops have been said to be tonic, narcotic, and diuretic; they have been recommended in the cure of rheumatism; and, like many articles in the materia medica which have received the sanction of respectable practitioners, they have been extolled far beyond their merit. They undoubtedly possess the advantages of a pleasant bitter, combined with a feeble narcotic; the late Mr. Freake was very sanguine as to their powers, and at his request I made a series of experiments at the Westminster Hospital, but I confess that their results have not established my confidence in their efficacy. OFFICINAL PREP. *Extract. Humuli.* L. *Tinct. Humuli.*

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* The chemist will not fail to observe this fact, as being similar to that which I noticed in the analysis of Elaterium, viz. the existence of a *bitter* principle quite distinct from, and independent of, *Extractive* matter; for in my experiments upon Elaterium, it will be seen, that the bitter principle was soluble in Alcohol of ·817, whereas the extractive matter was soluble only in water. See *Extract. Elaterii.*

L. Their use as a preservative of beer is well known, and the philosophy of their agency is fully described in the first volume of this work, (*page* 203;) it is equally notorious, that various vegetable substances are daily substituted for them, such as *Quassia** and *Wormwood*, both of which are inferior to the *Menyanthes Trifoliata*, or *Marsh Trefoil*. The people of Jersey are said to use the wood-sage, *Teucrium Scorodonia*; it imparts however a very high colour to the beer. During the first four years that the Cape of Good Hope was in possession of the British, more than 300,000 pounds of Aloes were imported into England; how could such a quantity be consumed? except, as Mr. Barrow states, by the London porter brewers; it must however be allowed, that a considerable quantity of this article is used by the Varnish makers.

[Soon after the publication of my essay on the Hop in 1819, I discovered the incorrectness of my deductions and statement, that the *Lupulin* contained no *essential oil*. I was preparing some further remarks on the same subject, in which I intended to correct the error, when I found they had been anticipated by an anonymous writer in a London Magazine. As to the general results of my experiments, detailed in that paper, I at that time attached importance to them, from the belief, that they would ultimately lead to vast economical improvements, in the permanent preservation of the only valuable portion of the hop, and in the manufactory of malt liquors. So far as can be determined from its sensible properties, a quantity of *Lupulin* which has been kept in bottles for three years, and which is now by me, has lost none of its aromatic flavour, or in any respect deteriorated by keeping. That the lupulin possesses all the virtues of the hop essential to the good quality and preservation of beer, is demonstrably evident from an experiment made in 1820, by an experienced and respectable brewer in this city. He obtained by threshing and sifting, from a bag of hops weighing about 150 pounds, 21 pounds of lupulin. Of this, and the usual quantity of other ingredients, he made 40 barrels of beer; the quantity into which he ordinarily put 150 pounds of hops. The summer following, and not less than four or five months after it was made, I had an opportunity of comparing this beer with that manufactured about the same time in the usual manner. The former was less bitter, but in no respect inferior to the latter. It would doubtless have been better than it was, had *all* the lupulin been separated from the hops used in the experiment; but that was impracticable. There can therefore now be no doubt of the correctness of my former opinion, that if any mechanical means can be devised, by which the *lupulin* may be easily and readily separated from the strobiles, it will consummate an improvement, of incalculable value, in the preservation of hops, and the art of brewing.

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* A Compound, consisting of *Extract of Quassia* and *Liquorice*, is used by fraudulent brewers to economize both malt and hops, and is technically called "MULTUM." An Extract of *Cocculus Indicus* is sold under the name of "BLACK EXTRACT," for imparting an intoxicating quality to the Beer.

With regard to the medicinal efficacy of hops, every accurate observer must acknowledge, with Dr. Paris, that they possess little merit, if administered according to the directions given in our pharmacopœias, the manner probably in which they were exhibited by him. The quantity of proof spirit, given in the tincture, would produce stimulating effects independent of any properties which it imbibes from the hops; and although its action may be modified by their combined agency, so as, in some measure, to increase the cordial and invigorating influence of the alcohol, it is difficult to conceive that the tonic or narcotic virtues of the hop should thus be sufficiently concentrated to produce much remedial benefit. It is otherwise with the pharmaceutical preparations of the *lupulin* which I have been accustomed to prescribe. Pretty extensive observation has confirmed my former opinion, that in "diseases which are the consequence of exhausted excitability, or more directly, of a deranged state of the stomach and bowels, are certainly much relieved by this medicine. It frequently induces sleep and quiets great nervous irritation, without causing costiveness, or, impairing, like opium, the tone of the stomach, and thereby increasing the primary disease." The preparation most commonly used in this city, is the tincture prepared by digesting ℥ij of the lupulin in Oj of alcohol. Dose. from ʒj to ʒij. Inquietude and watchfulness, connected with excessive irritability, in all its gradations, from the restlessness consequent upon exhaustion and fatigue to the most uncontrollable paroxysms of delirium tremens, are more frequently allayed by this remedy than any other in ordinary use. Another eligible mode of exhibiting the *lupulin* is in pills. From two to four pills, each containing three grains of the powder, may be given at a dose. Dr. Desroches, who published a dissertation on the hop in 1803, supposed that its narcotic principle resided in the essential oil; but is it not more than probable that this was a conjecture arising from the imaary soporific virtues of the hop pillow? It requires much experience and accurate observation to speak confidently upon the subject; but, from having frequently used the *lupulin* collected from old hops, in which little aroma seemed to remain, and also the extract prepared by decoction, by which process the essential oil is chiefly dissipated, I am still of opinion that its narcotic properties is in the resinous extract.*—I.]

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* The following is the process recommended by M. Planche for purifying the lupulin for pharmaceutical purposes.

The means employed to purify the lupulin are founded on its specific gravity and its insolubility in water. To separate the sand from the lupulin it is only necessary to put it into water, shake it a few minutes, and then decant that which the water holds in suspension. A black sand will be deposited at the bottom of the vessel. To purify it from all the sand, it is necessary to repeat this process a number of times; after which, spread it on filtering paper, let it drain, and dry it in a warm atmosphere, without however exposing it to the action of the sun, or to a temperature of more than 76° (Fah.) I have preserved lupulin prepared in this manner nine years, which is still strongly odorous. It is however better to be prepared every year. The process of cleansing the lupulin should be rapidly conducted, otherwise it will change.

Medicinal Preparations.

Powder of Lupulin. Like all resinous substances the lupulin forms an adhesive mass by pounding it, so that in order to obtain a more minute division of its particles than is natural, it is necessary to mix with it some other substance. We have prepared this powder many times in the following manner.

℞. Lupulin 1 part.
White sugar, pulverized 2 parts.

Pound the lupulin in a porcelain mortar, then gradually add the sugar, and rub them well together.

Lupulin Pills.

To make these pills it is unnecessary to use any excipient. Bruise the lupulin thoroughly, and it will become a deductile mass which may be easily moulded into pills. In the winter it is necessary to warm the mortar. This is the most simple preparation of the lupulin, and perhaps the only one which ought to be employed in order to appreciate properly the properties of this substance.

Infusion and Decoction of Lupulin.

We shall say nothing of these two preparations, excepting that the decoction takes up a quantity of resin through the means of the other principles.

Saturated Tincture of Lupulin.

℞. Bruised lupulin	℥i.
Alcohol	℥ii.

Digest for six days in a close vessel, press out the liquor, filter it, and add a sufficient quantity of alcohol to make ℥iij. of the tincture.

Resin of Lupulin.

Dr. Desroches makes the narcotic properties of the Hop to reside in the essential oil. Dr. Ives supposes it to be in the resin: It is evident, however,

HYDRARGYRUM.* L.D. HYDRARGYRUS. E.

Olim, Argentum vivum. *Mercury*, or *Quicksilver*.

Mercury, in its metallic state, is never applied to any medical use, except in visceral obstruction, in hopes of forcing a passage by its gravity; but under various forms of preparation, it affords a series of very active remedies. ADULTERATIONS. With the exception of Peruvian Bark, there is perhaps no active article in the materia medica more shamefully adultera-

that the latter does not speak of the pure resin, for he ascribes to it bitter and aromatic properties; and we have succeeded, by treating it repeatedly with alcohol and boiling water, in separating from it entirely the aromatic and bitter principle of the Hop. Thus, strictly speaking, the resin of Dr. Ives is but a resinous extract, to obtain which, pour a little of the saturated tincture on china plates, and place them in a stove of moderate temperature till the alcohol is evaporated.

EXTRACT OF LUPULIN.

This, when obtained from the watery infusion, is bitter and aromatic: prepared from the decoction it is equally bitter, less aromatic, and retains a quantity of the resin. This extract may perhaps be regarded as a superfluous preparation as we obtain the same effects from the lupulin in substance, from the pills, and from the alcoholic tincture.

SYRUP OF LUPULIN.

℞. Alcoholic tincture of lupulin, 1 part.
Simple syrup do. 7 parts.
m.f. This syrup is not transparent, but the resin in it is well divided.

OINTMENT OF LUPULIN.

Dr. Freack (Pharmacopœia Ruthenica) recommends an ointment prepared with the powdered hops and lard, as a remedy for cancer, to be used in the last stage of this distressing disease when the pain is intense, and when other means have failed of success. If this preparation is successful we may obtain more marked advantage from an ointment of this formula.

℞. Lupulin bruised 1 part.
Fresh lard 3 parts.

Let it be heated six hours in a water bath, strain, let it cool, scrape off the deposite from the bottom, melt it again and pour it off.†—I] ted; its impurity is at once indicated by its dull aspect; by its tarnishing, and becoming covered with a gray film; by its diminished mobility, in consequence of which its globules are unable to retain the spherical form, and therefore *tail*, as it is technically expressed. *Lead* is discovered by dissolving it in nitric acid, and adding to the solution, water imprégnated with sulphuretted hydrogen, when, if lead be present, a dark brown precipitate will ensue. *Bismuth*, by pouring the nitric solution into distilled water, when it will appear as a white precipitate. *Zinc*, by exposing the mercury to heat. *Tin* is detected by a dilute solution of nitro-muriate of gold, which throws down a purple precipitate. The presence of lead in mercury is a most dangerous circumstance; I have once witnessed a case of *cholica pictonum* in consequence of it. The usual mode of purifying quicksilver, by pressing it through chamois leather, will not separate the lead, if it be, as is generally the case, in combination with bismuth; for the manner in which the adulteration is effected, is by melting with a gentle heat these two metals, and adding the alloy to the mercury; and although this alloy should exceed one-fourth of the whole bulk, it will pass, together with the mercury, through chamois leather. On standing, the bismuth will be thrown upon the surface, in the form of a dark powder, but the lead will remain in solution. The greatest part of the mercury of commerce comes from Istria and Friuli, and from the Palatinate, and as it passes through the hands of the Dutch, we must expect to receive it in a state of alloy. On a superficial examination, it ought not, when shaken with water, to impart to it any colour; when agitated or digested with vinegar, it should not communicate a sweetish taste; and when exposed in an iron spoon to heat, it ought to evaporate entirely. The French are so well aware of the mischievous extent to which this metal is falsified, that in their late Codex they direct the reduction of the *red oxyd* in order to obtain it; the process however is far too expensive for general adoption. The Italian Jews purify quicksilver for their barometers, by digesting it in dilute sulphuric acid, which is by no means an improper process. The mode directed for the purification of mercury by the London College, (*Hydrargyrum Purificatum*) is unable to separate it *completely* from its more deleterious contaminations. It is a general opinion in Germany, that mercury, boiled in water, will impart to it an anthelmintic virtue;* this, if it happens, can only depend upon the impurities of the mercury; but large draughts of cold water are in themselves anthelmintic.

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* Υδραργυρος of the Greeks, from its fluidity and colour.

Quicksilver. Quick in the old Saxon tongue signifies *living*, an epithet derived from its mobility.

Mercury. Mythologysts inform us that he was the winged messenger of the Gods, and the Patron of Thieves,—What name therefore could be more appropriate for the metal in question than that of this Deity? for it is not only distinguished from all other metals by its mobility, but its universal agency has rendered it the resource of those worst of Thieves,—Quacks and Nostrum-mongers.

† *Journal de Pharmacie et des Sciencès Accessoires. Tome huitieme. P.* 322.

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* Podere (Med. Leg. T. iii. p. 455.) states that he has seen water, in which mercury has been boiled, become purgative and vermifuge; and yet the metal, in such cases, has not lost any of its weight.

HYDRARGYRUM PRÆCIPITATUM ALBUM. L.

SUBMURIAS HYDRARGYRI AMMONIATUM. D.

White Precipitate.

QUALITIES. *Form*, an impalpable powder of a snowy whiteness; *Odour* and *Taste*, none. CHEMICAL COMP. It is a triple compound of oxide of mercury 81, muriatic acid 16, ammonia 3 parts. SOLUBILITY. It is insoluble in water, and in alcohol; when triturated with lime water it does not become black. It is only used in combination with lard as an ointment. OFFICINAL PREP. *Unguent. Hydrarg. præcipitati albi.* L.D.

HYDRARGYRUM CUM CRETA. L.D.

Mercury with Chalk.

This is mercury slightly oxydized by trituration, and mixed with chalk. Grs. iij contain about one grain of mercury. DOSE, grs. v. to ℈ss. It is a mild and excellent mercurial, and has been known to cure syphilitic affections, when the constitution had proved rebellious to every other form of preparation. Dr. George Fordyce committed a great error, when he denied to this compound any mercurial efficacy. The peculiar mildness of this preparation has been very justly attributed to the effects of the carbonate of lime, in neutralizing acid matter in the primæ viæ.

HYDRARGYRI NITRICO-OXYDUM. L.

OXYDUM HYDRARGYRI RUBRUM PER ACIDUM NITRICUM. E.

OXYDUM HYDRARGYRI NITRICUM. D.

Nitric Oxyd of Mercury—Red Precipitate.

QUALITIES. *Form*, small scales of a bright red colour; *Taste*, acrid and corrosive. CHEMICAL COMPOSITION. It is, strictly speaking, a *sub-nitrate* of mercury, for if it be boiled for a short time with six times its weight of water, the liquor when filtered yields a precipitate with ammonia. SOLUBILITY. It is slightly soluble in water, but extensively in nitric acid, without any effervescence. USES. It is used only externally as an escharotic. OFFICINAL PREP. *Unguent. Hydrargyri*

Nitrico-oxyd. L.E.D. Adulterations. *Red Lead* may be detected by digesting it in acetic acid, and adding sulphuret of ammonia, which will produce a dark-coloured precipitate: it should be totally volatilized by heat.

HYDRARGYRI OXYDUM CINEREUM. L.E.

Pulvis Hydrargyri Cinereus. D.

Gray Oxyd of Mercury.

Qualities. *Form*, an impalpable gray-coloured powder, which becomes paler on exposure to air and light. *Odour* and *taste*, none. Chem. Composition. When properly prepared it is protoxide of mercury; but, as frequently found in the shops, it contains a mixture of the triple salt consisting of oxide of mercury, ammonia, and nitric acid. It is rarely used; although Dr. Saunders suggested it as a succedaneum for Plenck's remedy, and Mr. Abernethy considers it preferable to the red Sulphuret for mercurial fumigation, on account of its not yielding any suffocating vapour. Officinal Prep. *Unguent. Oxyd. Hydrarg. ciner.* E.

HYDRARGYRI OXYDUM RUBRUM. L.

Oxydum Hydrargyri. D.

Red Oxyd of Mercury.

The *Precipitate per se* of the older Chemists.

Qualities. *Form*, minute crystalline scales, of a deep red colour, inodorous, but acrid and caustic; it is soluble in several of the acids without decomposition; it is also slightly soluble in water; from which solution it is precipitated by ammonia. Uses. It is very active as a mercurial, and has been a favourite remedy with John Hunter (*Form.* 141) and other celebrated practitioners; it is however apt to affect the stomach and bowels, and is therefore now rarely employed except as an external application. Dose, gr. j. combined with opium gss. Adulterations. It is seldom adulterated, as it would be difficult to find a substance suited to that purpose. If well prepared it may be totally volatilized by heat.

HYDRARGYRI OXY-MURIAS. L.

Murias Hydrargyri Corrosivus. E.D.

Oxy-muriate of Mercury.

Corrosive Muriate of Mercury. Corrosive Sublimate.

Qualities. *Form*, a crystalline mass, composed of very small prismatic crystals, which is easily pulverized, and undergoes a slight alteration by exposure to air, becoming on its surface opaque and pulverulent. *Odour*, none. *Taste*, very acrid, with a metallic astringency. Chemical Composition. According to the latest views, it is a *Bi-chloride* of mercury, consisting of one proportional of mercury, to two proportionals of chlorine. In the French codex, it is termed "*Deuto-Chloruretum Hydrargyri.*" Solubility. It is soluble in eleven parts of cold, and in three of boiling water; and in four parts of alcohol; it is also very soluble in æther; indeed this latter liquid has the curious property of abstracting it from its solution in water, when agitated with it. Its solubility in water is greatly increased by the addition of a few drops of rectified spirit, or of muriatic acid. In a solution of muriate of ammonia it is thirty times more soluble than in water, no decomposition however arises; it is therefore probable that a triple salt is formed; it is also soluble in the sulphuric, nitric, and muriatic acids, and may be obtained again unaltered, by simply evaporating the solutions. Dr. Davy in his late researches upon corrosive sublimate states that with muriatic acid, common salt, and some other muriates, it forms definite compounds remarkable for their solubility. Its watery solution is said to change to green vegetable blues, but this is an optical fallacy, (*see page* 72.) On exposure to light this solution slowly undergoes decomposition; but Dr. Davy has shown by some late researches that corrosive sublimate remains unaltered when exposed in solution in media having a strong affinity for it, as alcohol, æther, muriatic acid, &c. and that decomposition only takes place under circumstances of complicated affinities, as in the instance of *Liquor Hydrargyri Oxymuriatis*, and in the aqueous solution; in which cases Calomel and Muriatic acid appear to be formed, and oxygen to be evolved. Incompatible Substances. The *carbonates of the fixed* alkalies precipitate it of a yellow hue, but the precipitates are not pure oxides; *ammonia* forms with it a white triple compound. *Lime water* decomposes it more perfectly than any alkaline body, occasioning a precipitate of a deep yellow colour,[*] which is a per-oxyd of mercury containing a little muriatic acid; this result forms a useful lotion to ill-conditioned ulcers, and has been long known under the title of *Aqua Phagadenica;* f℥ij of lime water should be employed for the decomposition of two grains of the salt. *Tartarized antimony*, *nitrate of silver*, *acetate of lead*, *sulphur*, *sulphuret of potass*, and *soaps*, decompose it. *Iron*, *lead*, *copper*, *bismuth*, and *zinc*, in their metallic state, also decompose it, producing precipitates which consist of an amalgam of the metal employed, except in those cases where the metal in question refuses to amalgamate with mercury, when this latter metal appears as a metallic dew, composed of very minute globules, with calomel; hence mortars of glass or earthenware should be used for dispensing this article; when triturated with olive oil, the oil becomes white, and when boiled with it, *calomel* is precipitated; the same happens if sugar be substituted for the oil. The volatile oils reduce it. When Oil of Turpentine was used, some traces of artificial camphor were discovered by Dr. Davy, and when the oils of Cloves and Peppermint, a purple compound distilled over, consisting of the oil employed and muriatic acid. The following vegetable infusions produce precipitates, viz. *the infusions and decoctions of chamomile*, *horse-radish root*, *calumba root*, *catechu*, *cinchona*, *rhubarb*, *senna*, *simarouba*, *oak bark*, *tea*, and *almond emulsion*. Swediaur observes, that "many authors have recommended *sublimate* combined with bark, but that a reciprocal decomposition is thus produced, by which the energies of both remedies are alike annulled;" to this ignorance, however, he thinks that many patients have been indebted for their lives; for, says he, "I see every day examples of weak and very delicate persons of both sexes, to whom ignorant practitioners prescribe, and sometimes in very large doses, the *corrosive sublimate*, with a decoction of bark; certainly without curing the syphilis, but at the same time without occasioning those grave and dangerous symptoms, which that acrid medicine would certainly produce, if given alone, or without that decoction." We have here presented the reader with the opinion of Swediaur; but it is just to state, that the experience of this country has rather tended to subvert, than to confirm such a belief. That the corrosive sublimate of mercury is actually decomposed by the vegetable principles of the bark is sufficiently evident, but it would seem that the oxyde thus developed, and recombined with vegetable extractive, is a very active mercurial, especially with respect to its alterative powers. The same observation will, to a certain extent, apply to the results of its decomposition by other agents, the fixed alkalies have been found by actual experiment to be incapable of disarming this salt of its virulence, because, as Orfila has stated, the oxide liberated is, in itself, an active poison. Mr. Rose has lately transmitted to me a formula for the preparation of "*Alterative Drops*," which he states, from ample experience, to possess very considerable powers as a mercurial, and to excite ptyalism, with a quickness and certainty, which characterize but few preparations of the same class. The principal ingredients are an alcoholic solution of *corrosive sublimate* and a vinous solution of *tartarized antimony*. It is scarcely necessary to observe that upon admixture a mutual decomposition takes place; the *per-oxyde of mercury* is precipitated by the alkaline element of the antimonial compound, whilst this latter salt, having its affinities thus overthrown, parts with the *pro-toxide of antimony;* so that the preparation holds a considerable quantity of insoluble matter in suspension, and which is to be carefully incorporated with the liquid by shaking the phial, whenever the drops are administered. Now there can be but little doubt but that the activity of this preparation is owing to the *per-oxide of mercury*, thus diffused in a state of minute division, while at the same time the antimonial pro-toxide very probably disposes the stomach and system to be more readily influenced by it, for reasons which have been very fully discussed in the first volume of this work, p. 185. Medical Uses. It is one of the most acrid and active of all metallic preparations; in well-directed doses, however, it is frequently of service in secondary syphilis, and in cases of anomalous disease, when it would be improper to administer the other forms of mercury.* In obstinate cutaneous diseases its administration in small doses is often very serviceable; its application also as a lotion to leprous affections, in the proportion of about one grain to a fluid ounce and a half of some liquid vehicle, I have frequently seen highly beneficial; in directing the use of so acrid a lotion, we should caution the patient not to touch his eyes until his hands have been washed; in consequence of a neglect of this kind I have seen a very severe ophthalmia produced. Its exhibition should be accompanied with mucilaginous drinks; when an overdose has been taken the *white* of egg, diluted with water, is the best antidote, for Orfila has found that albumen decomposes it, reducing it to the state of mild muriate, whilst the compound which it forms with it is inert. More recently vegetable gluten, as existing in wheat-flour, is said to answer as well as al-

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[*] If the quantity of Lime water be small, the precipitate will assume a red colour, and will be found to be *a Submuriate of the peroxyd.*

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* As this salt has been supposed to arrest the progress of syphilis more rapidly, and at the same time, to excite the salivary glands less than any other preparation of mercury, it generally forms the basis of those dangerous nostrums, which are advertised for the *cure of Syphilis, without Mercury*. The contrivers hope also to elude detection by the density and colour of the preparation.

Gowland's Lotion. Is a solution of *sublimate* in an emulsion formed of bitter almonds, in the proportion of about gr. jss to f℥j. A solution of this mercurial salt in Spirit of Rosemary, is also sold as an empirical cosmetic.

Norton's Drops. A disguised solution of corrosive sublimate.

Ward's White Drops. This once esteemed Anti-Scorbutic was prepared by dissolving mercury in nitric acid, and adding a solution of carbonate of ammonia; or frequently they consisted of a solution of *sublimate* with carbonate of ammonia.

Spilsbury's Antiscorbutic Drops. Of *Corrosive Sublimate* ʒij, *Prepared Sulphuret of Antimony* ʒj, *Gentian root* and Orange *peel*, equal parts ʒij, *Shavings of Red Saunders*, ℥j, made with a pint of proof spirit into a tincture, which is to be digested and strained.

"**The Antivenereal Drops,**" so famous at Amsterdam, were analyzed by Scheele, who found that they were composed of muriate of iron, with a small proportion of *corrosive sublimate*.

Marsden's Antiscorbutic Drops. A solution of *sublimate* in an infusion of Gentian.

Green's Drops. The basis of these also is *sublimate*.

Solomon's Anti-Impetigines. A solution of *sublimate*.

Rob Anti-Syphilitique, *par M. Laffecteur, Medicin Chemiste.* This popular nostrum of the French contains as a principal ingredient, *corrosive sublimate.* A strong decoction of the *Arundo Phragmitis*, (the *bullrush*) is made, with the addition of *sarsaparilla* and *anniseeds* towards the end, which is evaporated and made into a rob, or syrup, to which the *sublimate* is added.

Sirop de Cuisiniere. This consists of decoctions of *sarsaparilla*, *burrage flowers*, *white roses*, *senna*, and *aniseed*, to which *sublimate* is added, and the whole is then made into a syrup with sugar and honey.

Terre Feuilletee Mercurielle *of Pressavin.* This is *Tartarized Mercury*, for it is made by boiling the oxyd of mercury (obtained by precipitating it from a nitric solution, by potass) with *cream of tartar*.

Velno's Vegetable Syrup. There is great obscurity with respect to the genuine composition of this nostrum; it is supposed to consist of sublimate rubbed up with honey and mucilage. I have reason however to believe that it contains *antimony*, and the syrup of marsh mallows. Swediaur says that volatile alkali enters into it as an ingredient; this alkali was proposed by Dr. Peyrile, as a substitute for mercury, and it constitutes the active ingredient of the following composition, which was proposed by Mr. Besnard, Physician to the King of Bavaria.

Tinctura Antisyphilitica. *Sub-carb. potass*, lbj. dissolved in *Aq. Cinnam*, oj. *Opii puri*, ℥ij, dissolved in *Spir. cinnamon.* f℥iv. mix these separate solutions, and put them on a water-bath for three weeks, taking care to shake the vessel frequently; to this add *Gum arabic* ℥ij, *Carb. Ammoniæ* ℥j, dissolve in *Aq. Cinnamomi;* mix, filter, and keep for use. Dose, twenty-four drops three times a day, in a glass of the cold decoction of Marsh Mallow root.

The external use of these drops is also advised for local syphilitic complaints!

bumen; for the administration of which all that is required is to give wheat-flower and water. Dose, gr. ⅛ to ½, *see Liquor Hydrargyri Oxy-muriatis*, and *Form*: 142. Caution. The salt, as it is partially decomposed by light, should be kept in opaque bottles. Adulterations. It ought to be volatilized by heat; it is frequently met with in commerce contaminated with muriate of iron, sometimes with arsenic; the presence of calomel is at once discovered from its insolubility. Tests of its Presence. If any powder be suspected to contain this salt, expose it to heat in a coated tube, as directed in the treatment of arsenic, but without any carbonaceous admixture, when corrosive sublimate, if present, will rise and line the interior surface with a shining white crust. This crust is then to be dissolved in distilled water, and assayed by the following tests: 1st, *lime water* will produce, if the suspected solution contains this salt, a precipitate of an orange yellow colour. 2d, a single drop of a dilute solution of *sub-carbonate of potass* will at first produce a white precipitate, but on a still farther addition of the test, an orange-coloured sediment will be formed. 3d, *sulphuretted water* will throw down a dark-coloured precipitate, which when dried and strongly heated may be volatilized without any alliaceous odour. A very ingenious application of galvanic electricity has been also proposed by Mr. Silvester, for the detection of *corrosive sublimate*, which will exhibit the mercury in a metallic state. A piece of zinc or iron wire about three inches in length, is to be twice bent at right angles, so as to resemble the greek letter Π, the two legs of this figure should be distant about the diameter of a common gold wedding ring from each other, and the two ends of the bent wire must afterward be tied to a ring of this description. Let a plate of glass, not less than three inches square, be laid as nearly horizontal as possible, and on one side drop some sulphuric acid, diluted with about six times its weight of water, till it spreads to the size of a halfpenny. At a little distance from this, towards the other side, next drop some of the solution supposed to contain corrosive sublimate, till the edges of the two liquids become joined; and let the wire and ring, prepared as above, be laid in such a way that the wire may touch the acid, while the gold ring is in contact with the suspected liquid. If the minutest quantity of corrosive sublimate be present, the ring in a few minutes will be covered with mercury on the part which touched the fluid. This experiment may be beautifully simplified in the following manner; drop a small quantity of a solution containing corrosive sublimate on a piece of gold, and bring into contact a key, or some piece of iron, so as to form a galvanic circuit, when the gold will be immediately whitened. A solution of nitrate of silver will, under similar circumstances, occasion on the gold a white precipitate, but as no amalgamation takes place, it is readily wiped off, and cannot possibly occasion any fallacy.

Brugnatelli* has proposed the following method of distinguishing *corrosive sublimate* from *arsenic*—Take a quantity of fresh wheat starch, mix with water, and add a sufficient quantity of *iodine* to give the liquid a blue colour; if *corrosive sublimate* or *arsenic* be added to this liquor, the colour is alike destroyed, and it becomes reddish, but if the change has been effected by the latter substance, a few drops of sulphuric acid will restore the blue colour, but if by the former it is not recoverable by such means.

HYDRARGYRI SUB-MURIAS. L.

SUBMURIAS HYDRARGYRI MITIS. E.

SUBMURIAS HYDRARGYRI SUBLIMATUM. D.

vulgo. *Calomel.*†

This preparation has been known in pharmacy for upwards of two centuries under a variety of fanciful names, such as *Draco mitigatus; Aquila alba; Aquila mitigata; Manna metallorum; Panchymagogum minerale; Panchymagogus quercetanus; Sublimatum dulce; Mercurius dulcis sublimatus; Calomelas;* and yet there is not a name in this list that is so objectionable as the one at present adopted by our Colleges: for whether we adhere to the theory of muriatic acid being the *simple* body, or accede to the new views of *chlorine*, the name is equally inappropriate; if we regard it as a compound of muriatic acid, and oxyd of mercury, it is not a *sub*-muriate, but as much a *muriate* as the corrosive sublimate; the only difference depending upon the degree of oxidizement of the mercury, which is at a *minimum* in calomel, and at a *maximum* in sublimate. According to the new views respecting chlorine, colomel must consist of one proportional of chlorine with one proportional of metal, and is therefore a *chloride of mercury*. ("*Proto-Chloruretum Hydrargyri.*" Codex Med. Paris.)

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* *Ann: de Chimie et Phys:* iv. 334.

† For the origin of the term *Calomel* see *note*, Vol. 1, p. 60. The *Calomel* of Riverius was a compound of Hydrarg: Sub-mur: ℈j, and Scammony gr. vij, and Mr. Gray thinks that the term calomel was applied to it, as being a mixture of a white and dark-coloured powder.

Qualities. *Form.* A semi-transparent mass, consisting of short prismatic crystals;[*] inodorous, insipid, and of an ivory colour, which deepens by exposure to light. Solubility. It is considered as being insoluble, since according to Rouelle, one part requires 1152 of water, at 212° for its solution. Incompatible Substances. *Alkalies* and *lime water* decompose it, and turn it black, in consequence of precipitating the black oxyd of the metal; it is also decomposed by *soaps, sulphurets of potass and antimony;* and by *iron, lead,* and *copper;* hence it is improper to employ any metallic mortar for dispensing medicines which contain it. There seems to be reason for supposing that this preparation may undergo decomposition *in transitu,* and that therefore some substances may be *chemically,* and yet not be *medicinally* incompatible with it. If calomel be boiled for a few minutes in distilled water, to which alcoholized potass has been added, it is completely decomposed, a *muriate of potass* and *black oxyd of mercury* being the new products. Medical Uses.[†] This mercurial preparation is more extensively and more usefully employed than almost any other article in the whole range of the materia medica. It is capable of curing syphilis in every form, provided it does not run off by the bowels; and in obstructions and hepatic affections, it is in well-regulated doses a most valuable remedy; in combination, it probably merits the appellation of *Dirigens* more decidedly than any other remedy with which we are acquainted, for when combined with certain diuretics, it is diuretic, (*Form.* 103, 104) and in diaphoretic arrangements, it is diaphoretic: it moreover imparts force to many of the mild, and moderates the severity of drastic medicines: whenever we wish a strong and permanent impression to be made on the alimentary canal, and through it on the neighbouring viscera or the system generally, Calomel, by universal consent is adopted for such a purpose. (*Form.* 81, 88, 119, 161.) In larger doses it is one of the most efficient purgatives which we possess, especially in combination with other cathartics, it appears to be particularly eligible in the diseases of children; and it is singular that infants can generally bear larger doses of it than adults. Dose, as an alterative, from gr. ss to j, night and morning; as a purgative from gr. ij to gr. x, or in some cases even to grs. xv, or ℈j. Forms of Exhibition. That of pill, its insolubility and specific gravity render any other form ineligible. Officinal Prep. *Pil. Hydrargyri sub-muriatis.* L. Impurities. *Corrosive Sublimate* may be detected by precipitation being produced, by the carbonate of potass, in a solution made by boiling the suspected sample with a small portion of muriate of ammonia, in distilled water; calomel ought also, when rubbed with pure ammonia, to become intensely black, and not to exhibit any trace of an orange hue.

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[*] Mr. William Phillips has favoured me with a model of this crystal cut in wood; it is a rectangular prism whose solid angles are deeply replaced by planes.

[†] Many of the nostrums advertised for the cure of worms, contain *Calomel* as their principal ingredient, combined with *scammony, jalap, gamboge,* or some other purgative; they are uncertain and dangerous medicines; the method of exhibiting them in the form of lozenges (*worm cakes,*) is also attended with inconvenience, for the sugar and the gum generating an acid, by being kept in damp places, may considerably increase the acrimony of the mercury; besides which, the calomel is frequently diffused very unequally through the mass, one lozenge may therefore contain a poisonous dose, whilst others may scarcely possess any active matter.

Ching's Worm Lozenges. These consist of *yellow* and *brown* lozenges, the former are taken in the evening, the latter the succeeding morning.

The Yellow Lozenges. Saffron ʒss, of water oj, boil, and strain; add of *White Panacea of Mercury* (Calomel washed in spirit of wine) lbj, white sugar, 28 lbs. mucilage of *Tragacanth* as much as may be sufficient to make a mass, which roll out of an exact thickness, so that each lozenge may contain one grain of panacea.

The Brown Lozenges. *Panacea* ʒvij, *resin of jalap,* lbiijss, white sugar lb ix, *mucilage of tragacanth* q. s. each lozenge should contain gr. 1-2 of *panacea.*

Story's Worm Cakes. Calomel and jalap made into cakes and coloured by cinnabar.

Howard's or Jewel's *Hydro-Sublimate.* Instead of subliming so as to obtain the calomel in a concrete state, as directed by the pharmacopœia, the salt in the act of sublimation is exposed to aqueous vapour, and received in water. Being in a state of very minute division, it is lighter than common calomel in the proportion of three to five, and it cannot contain any corrosive sublimate. The French in their late *Codex* have introduced a similar formula, under the title of "Murias Mercurii dulcis mediante aqua subtilissime divisus, *juxta Methodum Josiæ Jewel.*"

This *Patent Calomel* of Howard is undoubtedly to be preferred, and appears, in consequence probably of its minute division, to affect the system more readily than that made according to the Pharmacopœias.

Submurias Hydrargyri Præcipitatus. E. D. This is produced by precipitating a nitrate of mercury by muriate of soda; the preparation will generally contain a small portion of *sub-nitrate*, and it is on that account more liable to run off by the bowels in small doses; in other respects it is essentially the same as that procured by sublimation.

HYDRARGYRI SULPHURETUM RUBRUM. L.

SULPHURETUM HYDRARGYRI RUBRUM. D. Olim, *Hydrargyrus Sulphuretus ruber. P.L.* 1817.—*Cinnabaris factitia*, 1745.

QUALITIES. *Form*, a red crystalline cake, inodorous, insipid, and insoluble in water, alcohol, acids, and alkalies, although these last bodies decompose it when melted with it ; it is also decomposed by nitro-muriatic acid, which unites with the metal, and disengages the sulphur. CHEMICAL COMPOSITION. It is a *bi-sulphuret of Mercury*, i. e. it consists of two proportionals of sulphur and one of mercury. USES.* It is now only used for the purpose of mercurial fumigation, which is done by inhaling the fumes, produced by throwing ʒss of it on red hot iron; the effect which is generally produced is violent salivation; this, however, does not depend upon the action of the substance as a *sulphuret*, but upon its decomposition, and the volatilization of the metallic mercury with a portion of sulphate and sulphureous vapour. Mr. Pearson observes, that it is useful in those cases of venereal ulcers in the mouth, throat, and nose, where it is an object to put a *sudden* stop to the progress of the disease, but that mercury must at the same time be introduced into the constitution, by inunction, just as much as if no fumigations had been made use of. Ulcers and excrescencies about the pudendum and anus in women are particularly benefited by it; and in these cases it is conveniently applied by placing a red hot heater at the bottom of a night-stool pan, and after sprinkling on it a few grains of the sulphuret, placing the patient upon the stool. ADULTERATIONS. *Red Lead** may be discovered by digesting it in acetic acid, and by adding sulphuret of ammonia, which will produce a black precipitate; *Dragon's Blood*, by its giving a colour to alcohol, when digested with it; *Chalk*, by its effervescence on the addition of an acid. It is known in the arts under the name of *Vermilion;* and by the following simple expedient its presence may, in very minute quantities, be easily recognised; boil a portion with sulphuric acid in a platina spoon, and lay the sulphate thus produced, in a drop of muriatic acid, on a piece of gold, and bring a piece of metallic tin in contact with both, when the white mercurial stain will be produced.

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* CHAMBERLAIN'S RESTORATIVE PILLS. "The most certain cure for the Scrofula, or King's Evil, Fistula, Scurvy, and all Impurities of the Blood."

My attention has been particularly directed to these pills, in consequence of having lately seen, during the course of my professional duty, several highly respectable persons, who had been induced to make trial of their efficacy. Their inventor, if I am rightly informed, resides at Ipswich, where, for the benefit of suffering humanity, he prepares these wonderful pills, and, with the alacrity of his patron deity, Mercury, transmits them to every corner of the United Kingdom. It appears from the printed directions which accompany the "*Restorative Pills*," that their use must be continued for a very long period; but upon this occasion we must allow the *Doctor* to speak for himself. "It may be necessary to observe, that in some cases of Scrofula, especially when the seat of the disease is in the feet, ankles, or hands, it may take a long time to effect a cure, even two years, and it may be twelve or sixteen months, with seeming little or no improvement, yet the cure is certain by perseverance." What—two years! and to be taken during a period of sixteen months without any sensible benefit! Is it possible that persons can be found with sufficient credulity and resolution to submit to so preposterous a proposal? We have no doubt that Mr. Chamberlain can produce as great a proportion of cures *after* such an ordeal, as was adduced in former times, in proof of the efficacy of the Royal Touch, and for the same obvious reason, (*See vol.* i. *p.* 33.)

Upon examining these said pills, I find them to consist of Cinnabar, Sulphur, Sulphate of Lime, and a little vegetable matter, perhaps gum. Each pill weighs a fraction less than three grains; upon dividing one with a penknife, and examining the cut surface through a lens, it exhibited the appearance of scoriæ of a brick red colour, having small yellowish masses imbedded in its substance. When exposed on a piece of platinum foil to the action of the blowpipe, it yielded vapours of a strong sulphureous smell, and left a residuum of a pearly white matter, which consisted almost entirely of *Sulphate of Lime.* Upon submitting a portion of the pill, in a glass tube, to the heat of a spirit lamp, two distinct sublimates were produced, the first consisting of Sulphur, the second of Cinnabar; and a small carbonaceous deposite remained. The Pill was then assayed, *via humida;* distilled water dissolved the Sulphate of lime, which was identified by appropriated tests, and left sulphur and cinnabar on the filtre. By the above experiments I feel warranted in considering the composition of this pill as fully ascertained.

HYDRARGYRI SULPHURETUM NIGRUM. L.E.

Hydrargyrus cum Sulphure. P.L. 1787. Olim.*Ethiops Mineral.*

QUALITIES. *Form*, a very black, impalpable, insipid, and inodorous powder. CHEMICAL COMPOSITION. It is a *Sulphuret of Mercury*, i. e. it consists of one proportional of sulphur, and one proportional of mercury; when heated in contact with the air, it is converted into a *bi-sulphuret.* SOLUBILITY. It is entirely soluble in a solution of pure potass, from which the acids precipitate it unchanged; it is insoluble in nitric acid. MED. USES. It is supposed to be alterative, and has been given for such a purpose, in doses from gr. v to ʒss, but its medicinal virtues are very questionable. ADULTERATIONS. It is frequently imperfect, globules of mercury being still discoverable in it by a magnifying glass, or by its communicating a whiteness to a portion of gold upon which it is rubbed; *ivory black* may be discovered by the residue, after throwing a suspected sample on a red hot iron; it is also sometimes mixed with equal parts of crude antimony.

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* The anatomist employs it for giving colour to his injections; for this purpose it is very essential that it should be quite free from *red lead*, or his preparations will in a short time lose their splendour, and ultimately become black. This has unfortunately happened with some preparations which Dr. Baillie has lately presented to the College of Physicians.

HYOSCYAMI FOLIA ET SEMINA. L.E.D.
(Hyoscyamus Niger.) *Henbane.*

Qualities. This plant, when recent, has a strong, fetid, and narcotic odour; properties which are nearly lost by exsiccation. Chemical Composition. Resin, mucilage, extractive matter, gallic acid, and some salts; an alkaline element (*Hyoscyama*) is said to constitute its active principle. This principle differs from the other vegetable alkalies, in being able to resist a low red heat, without undergoing decomposition. Solubility. Water freely extracts the narcotic powers of this plant, and decoction destroys them; diluted alcohol is the best menstruum. Incompatibles. Precipitates are produced by *acetate of lead*, *nitrate of silver*, and *sulphate of iron*; vegetable acids weaken its narcotic powers. The extract or inspissated juice is the best form in which it can be exhibited; see also the *Tincture*: its leaves form an anodyne cataplasm, and the smoke from its seeds, when applied by a funnel to a carious tooth, is recommended in severe fits of odontalgia.* The root of this plant is poisonous.† In Dr. Molyneux's appendix to Threlkeld's "Synopsis Stirpium Hibernicarum" are related several cases of its effects on persons who had eaten them instead of *Skirrets*. Officinal Prep. *Extract : Hyoscyam : Tinct : Hyoscyam :* L.E.D.

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* This was the favourite remedy of *Dr. Andrew Boorde*, who practised physic in Hampshire, and in his work printed in the black letter in London, A.D. 1775, entitled a *Breviarie of Health*, he advises for a toothach depending upon worms "*a candell of waxe with Henbane seeds, which must be lighted so that the perfume of the candell do enter into the tooth.*" This said Dr. Andrew Boorde is too important a personage to be passed over without some farther notice in this place, being no less than the Founder of that dignified class of the medical fraternity, better known by the name of *Merry Andrews*. Dr. Andrew Boorde lived in the reigns of Henry VIII. Edward VI. and Queen Mary, and was in the constant habit of frequenting fairs and markets, at which he harangued the populace publicly: his speeches were extremely humorous, and occasioned considerable mirth; his successors in this same line naturally endeavoured to imitate his bright example, and hence this class of itinerant quacks obtained the generic appellation of Merry Andrews.—Since the humiliating triumph of Quackery displayed at the Freemason's tavern under the presidency of the member for Coventry, and more recently at Margate, there is reason to believe that this class of itinerant mountebanks will assume a new and more dignified appellation, and that in commemoration of the services of their *philosophical* president, the worthy member above stated, they will in future be designated by the name of Ranting Peters.

† Anodyne Necklaces. The roots of *Hyoscyamus* are commonly strung in the form of beads, and sold under this name, to tie round the necks of chil-

ICHTHYOCOLLA.

(Acipenser *Huso & Ruthenus. The great and small Sturgeon.*)

Isinglass, Fish Glue.

The following kinds imported from St. Petersburg, are found in the market. *Short Staple ; Long Staple ; Book ;* and *Leaf. Picking the Staple*, as it is called, is a peculiar art practised by persons in this town, who gain a very good livelihood by it; they engage to return the same weight of isinglass in shreds, as they receive in *Staple ;* this in itself secures very fair profit, for by damping the isinglass in order to pick it, it gains considerable weight; these persons moreover are in the habit of adulterating it with pieces of bladder, and the dried skin of soles; such frauds however are easily detected by their insolubility, for pure isinglass will dissolve entirely, and yield a clear and transparent jelly; a single grain will produce, with an ounce of water, a solution of considerable thickness; it is also soluble in acids and alkalies; and although insoluble in alcohol, yet it is not precipitated by it from its watery solutions, unless when added in a very considerable quantity; it is coagulated by the infusions and decoctions of vegetable astringents; *carbonate of potass* likewise throws down a precipitate. 100 parts of good isinglass consist of 98 of gelatine, and two of the phosphates of soda and lime. Its solutions soon putrefy. Uses. It is now rarely used except as a nutrient; its application in fining wines and turbid liquors, is well known, and its mode of operation is equally obvious, for by forming a skin, or fine network, which gradually precipitates, it acts just like a filtre, with this difference, that in this case the filtre passes through the liquor, instead of the liquor through the filtre.

INFUSA. L.E.D. *Infusion.*

These are *watery* solutions of vegetable matter, obtained by maceration, either in cold or hot water, without the assistance

dren, to facilitate the growth of their teeth, and allay the irritation of teething. The application of medicated necklaces is a very ancient superstition.

of ebullition. In selecting and conducting the operation, the following general rules should be observed.

I. *Infusion should always be preferred to decoction, where the medicinal virtues of the vegetable substance reside in volatile oil, or in principles which are easily soluble; whereas, if they depend upon resino-mucilaginous particles, decoction is an indispensable operation.*

II. *The temperature employed must be varied according to the circumstances of each case; an infusion made in the cold, is in general more grateful, but less active, than one made with heat.*

III. *The duration of the process must likewise be regulated by the nature of the substances, or the intention of the prescriber; for the infusion will differ according to the time in which the water has been digested on the materials; thus, the aroma of the plant is first taken up, then, in succession, the colouring, astringent, and gummy parts.*

Infusions are liable to undergo decompositions by being kept, and therefore, like decoctions, they must be regarded as *extemporaneous* preparations. Unless the dose of them be otherwise stated, it is generally from f℥j to f℥ij.

I. *Simple Infusions.*

Infusum Anthemidis. L.E. It is a good stomachic; and when exhibited warm, is well calculated to assist the operation of emetics: (*Form.* 66:) the cold infusion, i. e. made with cold water, is more grateful. *Incompatibles.* All *soluble preparations of iron; nitrate of silver; oxy-muriate of mercury; acetate*, and *sub-acetate of lead; solutions of isinglass; infusion of yellow cichona bark.*

Infusum Calumbæ. L.E. See Calumbæ Radix. This infusion is more perishable than that of other bitters; in twenty-four hours a copious precipitation takes place in it; and in two days it becomes ropy, and even musty. *Form.* 155.

Infusum Caryophyllorum. L. f℥j of this infusion holds in solution the active matter of grs. vj of cloves. *Incompatibles.* Precipitates are produced by *sulphate of iron; sulphate of zinc; acetate of lead; nitrate of silver; tartarized antimony; lime water*, and *yellow cinchona.*

Infusum Cascarillæ. L. It is incompatible with the substances mentioned under *Infus. Caryophyll: Form.* 33.

Infusum Cinchonæ. L.E.D. We obtain in this preparation a feeble solution of the active constituents of bark, which will agree with many stomachs that are rebellious to the stronger preparations.

INFUSUM CUSPARIÆ. L. This is a judicious form of the bark, possessing its stimulant and tonic properties.

INFUSUM DIGITALIS. L.E. This is the best form in which we can administer the *fox-glove*, where our wish is to obtain its diuretic effects as speedily as possible. (*Form.* 110.) *Dose*, fʒij to f℥ss, twice a day, *see Digitalis*. *Incompatibles.* We shall counteract its effects by endeavouring to obviate its nauseating tendency by *brandy and water*, &c. Precipitates are produced by *sulphate of iron*, and the *infusion of yellow cinchona*, &c.

INFUSUM LINI. L.E. A cheap and useful demulcent; *alcohol* and preparations of *lead*, are of course incompatible with it; the *tinctura ferri muriatis* produces a flocculent precipitate.

INFUSUM QUASSIÆ. L.E. The proportion of Quassia directed for half a pint of water, is that of ℈j by the London, and ʒss by the Edinburgh College; the former is much too small, for in order to obtain a saturated infusion, ℥ij are required for that quantity of water. *Incompatibles. The salts of iron* produce no change in it; nor is it affected by any of those substances with which it is likely to come in contact in a medical prescription. It is highly useful in debilities of the stomach and intestinal canal, and in irregular and atonic gout, and it has been observed, that in hysterical atony, to which the female sex is so prone, the Quassia affords more vigour and relief to the system, than the Peruvian Bark, especially when combined with a small proportion of sulphate of zinc. To this, as well as the other stomachic infusions, it is usual to add at the time of prescribing them a small quantity of aromatic tincture or spirit. *Form:* 35; 144.

INFUSUM RHEI. L.E. The Edinburgh infusion is stronger than that of London, and is rendered more grateful by the addition of spirit of cinnamon; these infusions, however, when given without any *adjuvants*, produce but a feeble effect. This is obvious, since ℈j of rhubarb in substance, is at least equivalent in its effects to ʒiss in infusion. *Incompatibles.* The *stronger acids; the sulphates of iron and zinc; nitrate of silver; tartarized antimony; acetate of lead; oxy-muriate of mercury*, and the infusions of *cusparia*, *cinchona*, *catechu*. *galls*, and of some other *astringent* vegetables; the *alkalies* deepen the colour, but produce no decomposition.

INFUSUM SIMAROUBÆ. L. This infusion is inodorous, of a clear straw colour, with a slightly bitter taste. It presents the best mode of exhibiting *Simarouba bark*. Dose, f℥ij, beyond this it will prove emetic. *Incompatibles*. *Alkaline carbonates* and *lime water* render it milky; and it is precipitated by the following substances; *infusions of catechu*; *galls*, and *yellow cinchona*; *oxymuriate of mercury*; *nitrate of silver*, and *acetate of lead*.

Infusum Tabaci. L. It is never used but as an enema, in incarcerated hernia, and in ileus. See *Tabaci Folia*.

2. *Compound Infusions*.

Infusum Armoraciæ Compositum. L. In this preparation the stimulant property of the horse-radish is materially aided by the mustard; pure alkalies, but not their carbonates, may form extemporaneous additions; for the other incompatibles, see *Armoraciæ Radix*. Dose, f℥iss. *Form*: 45.

Infusum Aurantii Compositum. L. A grateful stomachic, having the agreeable compound taste of its several ingredients; it has the merit of sitting easily on the stomach.

Infusum Catechu Compositum. L.E. This infusion is a powerful astringent, rendered grateful by the addition of cinnamon; it will keep for several months, provided the directions of the Edinburgh College be not followed in adding the syrup. In prescribing it, we must remember that it contains a large proportion of *tannin*. See *Catechu*.

Ifusum Gentianæ Compositum. L. An elegant tonic and stomachic infusion. It affords a good example of the virtues of a natural substance being enhanced by the additions of art, as discussed at vol. 1, p. 200, for the bitterness of the gentian is here subdued by the aromatic quality of the lemon and orange peel. *Incompatibles*. *Acetate of lead* throws down a copious precipitate from the infusion, and *sulphate of iron* strikes a brown colour, but no precipitate takes place for several hours.

Infusum Rosæ. L.E.D. This is an infusion of the petals of the red rose, rendered astringent and refrigerant* by the addition of dilute sulphuric acid. *Incompatibles*. All those bodies which are decomposed by the sulphuric acid; the *sulphates of iron* and *zinc* do not immediately alter the infusion, but they *slowly* decompose it, producing precipitates of a dark colour. Dr. Clarke of Cambridge detected *iron* in the petals;†

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* Madden's Vegetable Essence. Is little else than the *Infusum Rosæ*.

† This fact has been lately confirmed by Mr. F. Cartier, who found 4 gr. of oxide of iron in 1000 gr. of red roses.

may not the presence of this metal enhance the tonic powers of the infusion? It affords a most elegant vehicle for the exhibition of cathartic salts.

Infusum Sennæ. L.E.D. A pint of water will take up the active matter of ℨj of senna, but nothing beyond that proportion; hence there is an unnecessary waste in the London process. The quantity of infusion directed to be made at one time, is also injudicious, since by simple exposure to the air for only a few hours, in consequence of the powerful affinity of its extractive matter for oxygen, a yellow precipitate takes place, and the infusion loses its purgative quality, and excites *tormina* in the bowels; in preparing it therefore, we see the necessity of conducting the process in *covered* vessels, and of making only such a portion as may be required for immediate use; indeed, notwithstanding every precaution, the extractive will to a certain extent become oxidized, and the infusion have a tendency to gripe.* Dr. Cullen used to say that Senna was one of the best purgatives, if it could only be divested of its griping quality; this however he was unable to obviate, because he was not aware of its cause, and therefore conjoined it with various aromatics, instead of those salts† which might be capable of increasing the solubility of its oxidized extractive, or the purgative activity of the infusion; see vol. 1, p. 195, and 209. *Soluble tartar* and *alkaline salts* are its most useful adjuncts; it is however rarely prescribed in practice without the addition of other cathartics. (Form: 70, 76, 90.) Sydenham's favourite "*potio cathartica lenitiva*," consisted of an infusion of tamarinds, senna leaves, and rhubarb, with the addition of manna and syrup of roses. The addition of tamarinds renders the infusion more grateful but less active; when made with *bohea tea*, it is in a great degree deprived of its nauseous taste; a decoction of guaiacum increases its powers, and is said at the same time to render it milder. Bitters also very considerably exalt its efficacy, see *vol.* 1. p. 186. A pint of the infusion with a drachm of jalap forms an excellent combination for purgative enema. *Incompatibles.* The infusion is disturbed by *strong acids; lime water: nitrate of silver: oxy-muriate of mercury: acetate of lead: tartarized antimony:* and by an *infusion of yellow cinchona.*

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* A valuable paper upon this subject is to be found in the first volume of "*The Reports of the Philomatic Society of Paris;*" *by Bouillon La Grange.* It has been lately supposed, but without much probability, that the griping property of Senna depends upon its admixture with some foreign leaf.

† **Selway's Prepared Essence of Senna.** This is a concentrated infusion of Senna, in combination with an alkali. It is well adapted for domestic use. It is sold at Selway's, New Cavendish-street, Portland-place, or at Johnson's, Oxford-street.

IPECACUANHÆ RADIX. L.E.D.

(Callicocca Ipecacuanha.) *Ipecacuanha.*

QUALITIES. This root, when powdered, has a faint disagreeable *odour*, and a bitter sub-acrid *taste*. CHEMICAL COMPOSITION. The late researches of MM. Majendie and Pelletier have detected the existence of a new vegetable proximate principle in this root, to which impecacuan is indebted for its emetic properties; they have, accordingly, denominated it *Emetine.** When pure, it assumes the form of transparent brownish red scales, which are nearly inodorous, but have a slightly bitter, acrid, but not nauseous taste. *Emetine* is decomposed by a heat higher than that of boiling water; it is insoluble in water, in every proportion, without undergoing the least change; and in a moist atmosphere it deliquesces; it is also soluble in alcohol, but not in æther; *nitric acid* dissolves it, but at the same time decomposes it; *dilute sulphuric acid* has no action on it; *muriatic acid* and *phosphoric acid* dissolve it, without altering its nature; *acetic acid* dissolves it with great facility; *corrosive sublimate* precipitates it from its solutions, but *tartarized antimony* has no effect upon them; *gallic acid*, the *infusion of galls*, and *acetate of lead* precipitate it. A grain excites violent vomiting, followed by sleep, and the patient awakes in perfect health! It exerts also a specific action on the lungs and mucous membrane of the intestinal canal; when taken in an overdose, its action can be instantly paralyzed by a decoction of galls. There seems to be no great advantage in substituting this body for the ordinary powder of Ipecacuanha, except perhaps that its taste being much less offensive, it may be very easily given to children. *Emetine* appears to exist in Ipecacuanha, combined in the following manner, *emetine* 16, oils 2, wax 6, gum 10, starch 40, woody fibre 20.

Since the discovery of *Emetine*, whose properties are described above. Pelletier has extended his researches into its composition and nature; and he has lately been enabled to state that this body, which, in conjunction with Majendie, he had formerly announced as "a new vegetable proximate principle," turns out to be a compound of a peculiar alkaline basis, which may be called *Emeta*, and some acid, together with an admixture of colouring matter. Its ultimate elements are oxygen, hydrogen, and carbon; it is a white and friable substance, slightly bitter, and very sparingly soluble in water; with the mineral acids it forms salts, from whose solutions the infusion of galls throws down white and flocculent precipitates; the alcoholic solution of *Emeta* acts upon vegetable colours as an alkali.

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* A formula for its preparation is introduced in the new CODEX of Paris, being the one used by M. Pelletier; it is as follows. Let ℥j of the powder of Ipecacuan be macerated in ℥ij of æther with a gentle heat for some hours, in a distilling apparatus: let the portion which remains be triturated and boiled with ℥iv of alcohol, it having been previously macerated in it; filter and let the remainder be treated with fresh portions of alcohol, as long as any thing is taken up from the root; mix these alcoholic solutions and evaporate to dryness; let this alcoholic extract be macerated in cold distilled water, in order that every thing soluble in that menstruum may be dissolved; filter, and evaporate to dryness; this extract is EMETINE. In this state, however, it contains a small quantity of *gallic acid*, but which is too inconsiderable to affect its medicinal qualities.

SOLUBILITY OF IPECACUAN. Alcohol takes up four parts in twenty of Ipecacuan; proof spirit six and a half; and boiling water rather more than eight parts; one pint of good sherry wine will dissolve about 100 grains; the alcoholic is more emetic than the aqueous solution; decoction destroys the emetic property of the root. INCOMPATIBLE SUBSTANCES. All vegetable astringents, as *infusion of galls*, &c. *vegetable acids*, especially the *acetic*, weaken its power; Dr. Irvine found that grs. xxx administered in f℥ij of vinegar produced only some loose stools. FORMS OF EXHIBITION: the form of powder is most energetic, although the vinous solution is both active and convenient. DOSE. The medicinal operation of this substance varies with its dose, thus grs. x to ʒss act as an emetic; (*Form.* 65,) grs. i to ij, as an expectorant, (*Form.* 134, 138,) and in still smaller doses it proves stomachic and diaphoretic; by combination with opium, this latter quality becomes more powerful, (*Form.* 28, 130.) The primary effect of this medicine is that of stimulating the stomach, and it is equally obvious that its secondary ones depend on the numerous sympathies of other parts with the organs of digestion. The action of this remedy upon the pulmonary organs is extremely interesting; it would seem that in certain conditions of these organs, attended with a dry, hard cough, it promotes expectoration, while in affections attended with an inordinate secretion of mucus, it as certainly represses it, and acts the part of an astringent. In dysentery and chronic diarrhœa, its astringent power is also very decided. *Form.* 58. When combined with cathartics it aids and accelerates their operation; *Form.* 84. OFFICINAL PREP. *Pulvis Ipecacuanhæ comp.* L.E.D. *Vinum Ipecac.* L.E.D.[*] The powder is liable to become inert, by exposure to air and light. The root is refractory, and is reduced to powder with difficulty, unless a few drops of oil, or an almond or two, be previously added. It is a curious fact that the effluvia of this root occasions in some persons the most distressing sensations of suffocation. I am acquainted with a lady, who is constantly seized with a violent dyspnœa, whenever the powder of Ipecacuan is brought into her presence. ADULTERATIONS. There are several varieties of Ipecacuan to be found in the market, which it is important to distinguish; *viz.* 1. The *brown variety*, which is the best, containing sixteen per cent. of emetin: 2, the *gray variety*, with fourteen per cent. of emetin; 3. the *white variety*, with only five of emetin. The two former varieties are those usually met with, being imported into this country in bales from Rio de Janeiro; the brown is distinguished from the gray in being more wrinkled; the white variety has no wrinkles whatever.

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[*] IPECACUANHA LOZENGES. Each Lozenge contains half a grain of Ipecacuanha.

JALAPÆ RADIX. L.E.D. (Convolvulus Jalapa.)
Jalap.

QUALITIES. This root is pulverulent, furnishing a powder of a pale brownish yellow colour. *Odour*, peculiar; *Taste*, sweetish and slightly pungent. CHEMICAL COMPOSITION. Resin, gum, extractive, fecula, lignin, and some salts. The combination of the three first principles appears requisite for the production of its *full* cathartic effect. SOLUBILITY. Proof spirit is its appropriate menstruum. MED. USES. It is a cathartic of a stimulating description, acting principally upon the colon, and notwithstanding the tormina it may sometimes induce, it is no less safe than efficacious; as a hydragogue purgative it has been greatly extolled, but for such a purpose it will answer better in combination, as in *Form.* 73. Its action is said to be promoted by the addition of Ipecacuan, or tartarized antimony. (*Form.* 84.) In dropsy its union with supertartrate of potass is calculated to promote its beneficial operation. FORMS OF EXHIBITION. That of powder is the most eligible, especially when combined with some other powdered substance; pulverization increases its activity, *see Pulveres.* Van Swieten advised it to be pulverized, and mixed with sugar and a small quantity of some aromatic. DOSE, gr. x to ʒss. OFFICINAL PREPARATIONS. *Pulv. Jalap. comp.* E. *Extract. Jalap.* L.E.D. *Tinct. Jalap.* L.E.D. *Tinct. Sennæ comp.* ([illegible]) E. ADULTERATIONS. *Briony root* is sometimes mixed with that of jalap, but it may be easily distinguished by its paler colour, and less compact texture; and by not easily burning at the flame of a candle. When the *teredo* has attacked it, it should be rejected.

[JUGLANS CINEREA.

W. IV. 456. *Bw. II.* 115. *Liber Radicis.*

Butter-nut. The Bark of the Root.

The butter-nut, or as it is called in some places, the white walnut, is a tree too well known to require botanical description. It grows abundantly in the northern and middle States. Its cathartic property resides most plentifully, though not exclusively, in the inner bark of the root. It should be gathered in May or June. Solubility. Boiling water extracts its medicinal virtues, and by evaporation yields it in the form of *extract*, which is the only preparation that can be regarded as *officinal*, and, indeed, the only one fit for use. Medical Use. The extract of butter-nut has been long and justly celebrated as one of the best cathartics which this country affords. It has been objected that it was uncertain in its operation, sometimes purging briskly, and at others producing no effect, but there is little uncertainty with regard to its operation when properly prepared. Much of that sold in the shops is manufactured in the interior of the country, by boiling, not only the bark of the limbs and branches of the tree, instead of the bark of the roots, but the limbs and branches also, without regard to the season of the year in which they are gathered. It is also sometimes boiled too rapidly, and burnt in the process of evaporation, and thus rendered excessively bitter, and nearly or quite inert. When the extract is good, from ℈i to ʒss will pretty uniformly produce catharsis. Its action seems to be more like that of rhubarb than of any other article, quickening the peristaltic motion, without inducing subsequent debility and torpor of the bowels. As its action is mild, it may be advantageously combined with other cathartic medicines, particularly with calomel.—I.]

JUNIPERI BACCÆ ET CACUMINA. L.E.D.

(Juniperus Communis.)

Juniper Berries and Tops.

The principal constituents of these berries are mucilage, sugar, and volatile oil; in the latter of which their diuretic virtues reside. Forms of Exhibition. That of an infusion, made with ℥ij of the berries, to oj of hot water. Unless pains, however, are taken, by strong contusion, to bruise and break the seeds, the preparation will contain but little of the juniper flavour. The bruised berries may be also triturated with sugar or some neutral salt, and be thus exhibited in substance. Dose, ℈j to ℈ij. Officinal Prep: *Oleum Junip.* L.E.D. *Spirit. Junip. Co.* L.E.D. The taste and diuretic properties of Hollands depend upon this oil; English gin is flavoured by oil of turpentine.

KINO. L.E.D. *Kino.*

(Pterocarpus Erinacea.* *Extractum.* L. Ecualypti Resiniferi, *Succus Concretus.* E. Butea Frondosa. D.)

There is a very considerable obscurity with regard to the history and chemical constitution of this substance; three varieties of it are met with in the shops, viz. 1, *African Kino,* which bears the highest price, and has all the appearance of a natural production, slender twigs being often intermixed in its substance; it is of a reddish brown colour, and has a bitterish astringent taste. 2. *Botany Bay Kino,* has also the aspect of a natural production, it is in more solid masses than the former species, is less brittle (for it contains a very small proportion of resin) and, with its astringency, has a disagreeable sweetish taste. 3. *Jamaica Kino,* this is the one most commonly met with; it has the appearance of a dry extract, is in small fragments, of a colour more nearly approaching to black than that of the others, and has an astringent and slightly bitter taste. There is also a fourth variety mentioned, viz. the *East India* or *Amboyna,* but this does not appear to differ from the African variety. Chemical Composition. In all the varieties the predominant principles are tannin and extractive. Solubility. The best menstruum is diluted alcohol. *Incompatible Substances,* vide *Gallæ.* Mr. Thomson also states a fact which I have reason to consider quite correct, that the alkalies destroy the astringent property of kino; all the varieties are soluble in solutions of pure potass and ammonia, and no precipitation takes place on the addition of water. Med. Uses. It is principally employed as an astringent, but from its liability to vary in strength, it has been very generally superseded by Catechu. Forms of Exhibition. Either in substance or in the form of watery infusion, or in that of tincture. **Dose**, grs. x to ℨss. **Officinal Prep.** *Tinct. Kino.* L.E.D. *Elect. Catechu.* E.D. *Pulvis Sulphatis Alum. co.* E.

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* The plant which yields *Kino* is at length satisfactorily proved to be the *Pterocarpus Erinacea;* the London College will accordingly, in the next edition of the pharmacopœia, make the alteration which I have here ventured to anticipate.

LICHEN. L.E.D. (Lichen Islandicus.) *Lichen.*

Iceland Liverwort. Iceland Moss.

Qualities. *Odour*, none; *Taste*, mucilaginous and bitter. **Solubility.** The effect of water upon this vegetable substance is materially modified by temperature; if cold, the lichen absorbs nearly its own weight by maceration, but gives out to the menstruum little or none of its virtues; if the water be warm, it soon acquires a bitter impregnation; by ebullition, a decoction is obtained, which, as it cools, gelatinizes. See *Decoct. Lichen.* **Chemical Composition.** Proust has shown by analysis that 100 parts of this moss contain 64 parts of a substance bearing some analogy to vegetable gluten, 33 of a matter, soluble in hot water, and resembling starch, and 3 parts of a bitter principle. **Med. Uses.** This vegetable was introduced to the notice of the profession by Linnæus, who recommended its decoction, as having been administered with great success for coughs in Sweden. Upon its introduction into this country, its patrons bestowed so many extravagant eulogiums upon its powers, that the less sanguine practitioner at once abandoned its use in disgust, and it fell into unmerited disrepute. It would be idle to speak of its specific effects in phthisis; but, as a demulcent, it is certainly very superior to the mucilaginous mixtures in ordinary use, and its simple bitter principle at the same time tends to produce a tonic effect, which is frequently desirable in the debilitated condition which characterizes the latter stages of this disease. There are circumstances, however, which may render the removal of the bitter advantageous; in which case, maceration in successive waters, or in a weak alkaline ley, as recommended by Westring, will be found to answer the intended purpose. **Officinal Preparation.** *Decoct. Lichen. Island.* E.D.

LIMONES. L.E.D. (Citrus Medica. *Baccæ.*)

Lemons.

Succus—The Juice consists of *Citric acid*, mucilage, extractive matter, and small portions of sugar and water. It may be preserved for a considerable length of time, by covering its surface with fixed oil.

Cortex—The Rind or Peel is composed of two distinct parts; the exterior, which contains glands, filled with a fragrant volatile oil, upon which all its properties depend, and the *interior coat*, which is tasteless and indigestible. The flavour may be obtained by rubbing lump sugar upon it, which will imbibe the oil, and if it be then dried by a very gentle heat, may be preserved unimpaired for any length of time, and will be preferable to the volatile oil obtained by distillation, for the fire generally imparts an unpleasant or empyreumatic flavour.*

It has been already stated, that "the different parts of the same plant have frequently very different properties." The Lemon offers a good example of this fact, for its juice is *acid*, its seeds *bitter*, and its peel *aromatic*.

LINIMENTA. L.E.D. *Liniments.*

These are external applications, having the consistence of oil or balsam. If we except the *Liniment. Æruginis*, all the officinal liniments are decomposed by the substances which are incompatible with soaps.

Linimentum Æruginis. L. *Oxymel Æruginis.* P.L. 1787. *Mel. Ægyptiacum.* P.L. 1745. *Unguentum Ægyptiacum.* P.L. 1720. Diluted with water, it has been recommended as a gargle in venereal ulcerations, but its use is hazardous; it is a detergent escharotic preparation.

Linimentum Ammoniæ Fortius. L. *Oleum Ammoniatum*, E. *Linimentum Ammoniæ.* D. It consists of *liquor ammoniæ one part*, *olive oil two parts*, (oil eight parts, E.D.) The alkali forms with the oil a soap, which is held dissolved by the water in the *liquor ammoniæ*. It is an excellent rubefacient, and penetrating liniment.

Linimentum Ammoniæ Sub-carbonatis. L. *Linimentum Ammoniæ.* P.L. 1787. *Linimentum Volatile.* P.L. 1745. The carbonic acid prevents the perfect formation of soap in this liniment; unlike the former one, therefore, it deposites the soapy matter on standing. It is much less stimulating than the preceding one.

Linimentum Calcis. E.D. *Oil and lime water, equal parts.* This is an *earthy* soap, formed by the combination of lime and oil; the soapy matter separates on standing, it should therefore be *extemporaneous*. In cases of burns and scalds where the cuticle has been destroyed, it is an advantageous application.

Linimentum Camphoræ. L. *Oleum Camphoratum.* E.D.

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* Essential Salt of Lemons. See *Potassæ Supertartras.*

Camphor one, olive oil, four parts. It is a simple solution of camphor in fixed oil, and forms a very useful embrocation to sprains, bruises, glandular swellings, and in rheumatic affections.

Linimentum Camphoræ compositum. L. *Camphor two, liquor ammoniæ six, spirit of lavender sixteen parts.* It is highly stimulating.*

Linimentum Hydrargyri. L. A pound of this liniment contains nearly ʒiv of mercury; it affects the mouth more rapidly than mercurial ointment, and hence its application requires caution.

Linimentum Saponis compositum. L. *Hard soap* iij, *camphor* j, *spirit of rosemary* xvj parts. It is a stimulant and anodyne application, and in local pains opium may be advantageously added to it. It is commonly used under the name of *Opodeldoc.*† See *Sapo.*

Linimentum Terebinthinæ. This liniment was introduced by Mr. Kentish of Newcastle, as a dressing to recent burns, which he continued until the eschars became loose.

LINUM CATHARTICUM. L.D. *Purging Flax.*

The qualities of this plant reside in extractive matter, hence water extracts, but long decoction injures them. Med. Uses. It is strongly purgative. Forms of Exhibition. ʒij of the dried herb infused in oj of boiling water. Dose, fʒij.

LINI USITATISSIMI SEMINA. L.E.D.

Linseed, or Common Flax Seed.

These seeds contain a large proportion of mucilage, and one-sixth of their weight of fixed oil; by infusion in water, a clear, colourless, inodorous, and nearly insipid mucilage is obtained; ʒss of the unbruised seeds is sufficient for oj of water;

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* Ward's Essence for the Headach.—Nothing more than *Liniment. Camph. Comp.*

† Steers's Opodeldoc.—Castille Soap ℥j, Rectified Spirit, f℥viij, Camphor ℥iiiss, Oil of Rosemary fʒss, Oil of Origanum fʒj. Solution of Ammonia fʒvj.

Bates's Anodyne Balsam.—It consists of one part of Tincture of Opium, and two of Opodeldoc, i. e. *Liniment. Sapon. Comp.*

Freeman's Bathing Spirits.—*Liniment Saponis Comp.* coloured with Daffy's Elixir. Jackson's Bathing Spirits differs from the former in the addition of some essential oils.

Lynch's Embrocation.—Olive oil impregnated with Bergamot and some other essences, and coloured with Alkanet root.

the farina of the seed is well adapted for cataplasms. **Officinal Prep.** *Infus. Lini.* L. *Oleum Lini.* L.E.D.

LIQUOR ALUMINIS COMPOSITUS. L.

Aqua Aluminosa Bateana. P.L. 1745.

This is a compound solution of *alum* and *sulphate of zinc.* It is powerfully astringent, and is successfully used as a detergent lotion to old ulcers; as a collyrium, or as an injection in gleet, and fluor albus; it will also often answer in removing chilblains, and in curing slight excoriations.

LIQUOR AMMONIÆ. L. AQUA AMMONIÆ. E.

AQUA AMMONIÆ CAUSTICÆ. D.

Solution of Ammonia.

Qualities. *Form,* a limpid, colourless fluid; *specific gravity,* ·960, or, f℥j weighs about 438 grs. *Odour,* strong and pungent: *Taste,* extremely caustic. **Chemical Composition.** A solution of ammoniacal gas in water, which varies considerably in strength in the different pharmacopœias. When prepared according to the London and Edinburgh Colleges, it contains nearly twenty-five per cent. of ammonia, whereas the Dublin preparation does not contain more than 16. **Solvent Powers.** It is an active solvent of many vegetable principles, e. g. *oils, resins,* &c. With alcohol it unites in every proportion; it assists the oxidizement of copper and zinc, and dissolves many of the metallic oxides. **Med. Uses.** Stimulant, rubefacient, and antacid. **Forms of Exhibition.** In milk, or any liquid vehicle; if in decoctions, or infusions, they must be previously cooled, for at 130° the ammonia will escape in the form of gas. **Dose,** ♏ x to xxx. **Officinal Prep.** *Linimentum. Ammoniæ.* L.D. *Oleum Ammon.* E. *Spir. Ammoniæ.* L. *Spir. Ammoniæ comp.* L. *Spir. Ammon. succinat.* L. *Liniment. Camphor. comp.* L. **Adulterations.** The presence of other salts in the solution may be discovered by saturating a portion with pure nitric acid, and applying the test for sulphuric acid (*Barytes*) and that for muriatic acid, (*Nitrate of Silver.*) Carbonic acid is detected by its effervescing with acids, or by its forming with lime water a precipitate, soluble, with effervescence, in nitric acid; it ought to be free from all fetor; its strength can only be determined by taking its specific gravity. It should be preserved in well-closed bottles, and their dimensions should be small, for when in large vessels it often becomes carbonated before it is half used.

LIQUOR AMMONIÆ ACETATIS. L. Aqua Acetatis Ammoniæ. E.D.

Solution of Acetate of Ammonia.

Olim, *Spirit of Mindererus.*

This preparation is a solution of the neutral *acetate of ammonia*, with a proportion of carbonic acid diffused through it; it is made by saturating the sub-carbonate of ammonia with distilled vinegar, for which purpose it will generally be found that ʒj of the alkali will saturate oiss of the vinegar; since, however, the quantity of acid in distilled vinegar is liable to a constant variation, the exact point of neutralization should be ascertained by the alternate application of litmus and turmeric papers; for if the proportions be not accurately adjusted, some of the metallic salts, especially those of *antimony*, which are often prescribed in conjunction with it, are decomposed, and thus rendered inefficacious; and on this account an excess of alkali is to be feared more than that of acid. This preparation is also, not unfrequently, employed as a collyrium, when much serious mischief may arise from the carbonate of ammonia predominating. It has been already stated that a very minute proportion of extractive matter is rendered sensible on the addition of an alkali; hence this preparation frequently derives from the vinegar a brown hue, which may be removed by filtering the solution through a little well-burnt charcoal. It also deserves notice that the presence of a trace of copper, derived from the copper cocks through which the vinegar has passed, will impart a *brown* tinge, whilst in larger quantities this metal yields a *blue* colour with ammonia. Incompatible Substances. *Acids; fixed alkalies; alum; lime water; sulphate of magnesia; corrosive sublimate; nitrate of silver;* and the *sulphate of zinc, copper, and iron. Acetate of lead* produces also a copious precipitation, but this depends upon the presence of the carbonic acid diffused through the solution, which decomposes the salt and forms an insoluble carbonate of lead. *Magnesia* likewise, contrary to what might be supposed, decomposes the solution and renders it pungent, from the extrication of ammoniacal gas; this phenomenon depends upon the magnesia forming a triple acetate with one part of the ammonia, and setting the remainder at liberty. **Med. Uses.** When assisted by warmth and plentiful dilution, it is an excellent diaphoretic, and produces its effects without quickening the circulation: (*Form:* 117, 126,) by keeping the surface of the body cool, its action is determined to the kidneys, and it proves diuretic, especially when combined with remedies of a similar tendency. (*Form:* 111.) **Dose,** fʒiv to fʒxij. Externally it furnishes a lotion, valuable as a refrigerent, especially when combined with some spirituous preparation. See *Form:* 148.

LIQUOR AMMONIÆ SUB-CARBONATIS. L.

Solutio Sub-Carbonatis Ammoniæ. D.

Aqua Carbonatis Ammoniæ. E.

This is merely a solution of the *solid* sub-carbonate in distilled water, see *Ammoniæ Sub-carbonas.* **Dose,** fʒss to fʒj in any bland liquid. **Adulterations.** There is frequently a deficient quantity of the sub-carbonate in solution, its pungency being kept up by the addition of *liquor ammoniæ;* this may be discovered by shaking it with twice its bulk of alcohol, when a coagulum of considerable density should occur, the absence of which will denote the sophistication of the article. Its *specific gravity* should be 1.150.

LIQUOR ANTIMONII TARTARIZATI. L.

Vinum Antimonii Tartarizati. P.L. 1787. Vinum Tartritis Antimonii, olim *Vinum Antimoniale.* E. vulgo, Antimonial Wine.

During the period that I was Censor of the College, I took considerable trouble, in conjunction with my colleagues, to ascertain the state in which this preparation was to be generally met with in the wholesale and retail shops of the metropolis; we were satisfied, during our official visitations, that where *sound* Sherry wine had been employed as a solvent, an efficient and permanent solution was obtained, and that no precipitation of the antimony took place, the sediment which occurred being merely *tartrate of lime*, and incidental impurity, derived from the *cream of tartar* of the tartarized antimony; but in a majority of instances an inferior wine was substituted, in which case the antimonial oxyd was found in a copious precipitate, in combination with vegetable extractive matter; and I have since seen this decomposition so complete, that the super-natant liquor would not yield any trace of the antimonial salt, when assayed with sulphuret of potass. Under such circumstances the college has at length determined to substitute a weak spirit for the wine. Dose ♏ x to fʒj, in any suitable vehicle, repeated every three or four hours, in which case it acts as a diaphoretic. As an emetic, it may be given to infants in the dose of a tea-spoonful every ten minutes, until the desired effect is produced. See *Antimonium Tartarizatum*, and *Form:* 69, 117.*

LIQUOR ARSENICALIS. L.

Solutio Arsenicalis. E.

This is a solution of the *Arsenite of Potass*, coloured and flavoured by the *Compound Spirit of Lavender*, fʒj of which contains gr. ½ of *arsenious acid*. It was introduced into practice by Dr. Fowler of Stafford, as a substitute for the empirical remedy known by the name of "*The Tasteless Ague Drop.*" It is a powerful tonic, and has been very successfully administered in the cure of intermittent and remittent fevers, periodical headaches, and as an alterative in many anomalous diseases of the skin. It has been also given, with decided effect, in certain visceral obstructions; its use however is to a great degree empirical, although we may observe, generally, that wherever strong arterial action exists, arsenic will do harm. Incompatible Substances. *Lime water; nitrate of silver; the salts of copper; hydro-sulphuret of potass, and the infusions and decoctions of bark.* Dose, ♏ iv, gradually increased to ♏ xxx, twice a day. See *Arsenici Oxidum.*

LIQUOR CALCIS. L. Aquæ Calcis. E.D.

Lime Water.

It is a saturated solution of lime in water; fʒj of which contains ¾ of a grain.† Incompatible Substances. *All alka-*

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* Ward's Red Drop. A strong vinous solution of Tartarized Antimony.

† Since the last edition of this work, Mr. Dalton has discovered the very curious fact, that lime is more soluble in cold than in hot water, and has given a table of quantities from which he concludes that the quantity held in solution by water at 32° *Fah:* is nearly double that retained by water at 212.° Mr. Phillips has lately taken up the subject, and confirmed the statement of Mr. Dalton,

thus 10,000 gr. of water, at 212°, dissolve 7.8 of lime
10,000 gr. of water, at 32°, ——— 15.2———

line and metallic salts; lime water; borates; tartrates; citrates; sulphur; spirituous preparations, and *the infusions of all astringent vegetables*. It should be kept in close vessels, for if exposed to the air, the lime will attract the carbonic acid, and become an insoluble carbonate; the addition of an *alkaline carbonate* produces the same effect instantaneously.* **Med. Uses.** It is an antacid, and is therefore useful in dyspepsia attended with acidity; *Form:* 149, mixed with an equal quantity of milk, it furnishes an excellent remedy in infantile complaints connected with bowel affections; it is also astringent in leucorrhœa, in the last stages of dysentery, and in protracted diarrhœa. It dissolves also the slimy mucus with which disordered bowels are so generally infested; on account of this latter property, it has been exhibited in calculous affections,† with a view of dissolving the cementing ingredient of the con-

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Mr. Phillips attempts to account for this apparent anomaly "from the effect which heat sometimes produces of increasing instead of diminishing the attraction of cohesion. In the present case, he continues, the affinities which are brought into play are, the attractions of aggregation of the particles of the lime upon each other, the attraction of the lime to form a *hydrate* with a small portion of the water, and the mutual affinity existing between that hydrate and the water of solution." And at the high temperature he thinks that the former affinities may be so heightened as to overpower the latter.

* Upon this fact Dr. Alston founded his ingenious process for preserving water from putrefaction; in the first place he impregnated the water with lime, which from its antiseptic property answered the purpose of keeping it most completely, and then in order to get rid of the lime, he merely added the carbonate of magnesia, which by transferring its carbonic acid, rendered the lime insoluble, and consequently the water tasteless and fit for economical uses. Mr. Henry, however, proposed the introduction of a current of carbonic acid into the cask, and this expedient has been found equally effective, and far more economical.

† **Mrs. Stephens's Remedy for the Stone** consisted of lime, which was produced by calcining the shells of eggs and snails, and made into pills with Soap. A decoction was also administered, consisting of *Chamomile, Fennel, Parsley*, and *Burdock*, together with a portion of *Alicant Soap*. This is a very rational practice, and is very much what the practitioners of the present day depend upon: the observations of Mrs. Stephens respecting their administration, is equally judicious. "If," says she, "these medicines produce pain, *it will be necessary to give an opiate with them*, and it must be at all times a principal care *to prevent a looseness*, for if this should happen it would carry off the medicines; under such circumstances the quantity of the *Decoction*, since it is laxative, must be diminished, and other suitable means must be taken by the advice of a Physician." The credit of introducing alkaline medicines for the cure of calculous disorders, does not however rest with **Mrs. Stephens**. It has been before stated in this work, that Basil Valentine employed a fixed alkaline salt in such cases; and I may here add, that **Sennertus**, in his *Praxis Medica*, mentions a lithonthriptic that was in great esteem and in general use in his time, which consisted of one ounce of *Salt of Tartar* dissolved in a pint of parsley water, and afterward tinged yellow with orange peel.

cretion, and thereby of destroying its cohesion; see *Vol.* 1. *p.* 156. Not being very nauseous, it is easily given under any circumstances, and it is not liable to produce that irritability of stomach which frequently attends the long-continued use of the fixed alkalies. It also frequently forms the basis of astringent gargles. FORMS OF EXHIBITION. Milk disguises its flavour, without impairing its virtues. DOSE f℥j to f℥vj.

LIQUOR FERRI ALKALINI. L.

Solution of Alkaline Iron.

This preparation is nearly the same as Stahl's *Tinctura Martis Alkalini.* CHEMICAL COMPOSITION. It is by no means ascertained. INCOMPATIBLE SUBSTANCES. It is a very injudicious preparation, for it cannot be exhibited in any form without decomposition; *water*, especially if not distilled, and *vegetable infusion* and *decoctions*, produce dense precipitates; *pure acids*, *alkalies*, and *spirit*, also decompose it.

LIQUOR HYDRARGYRI OXY-MURIATIS. L.

This solution of corrosive sublimate is intended to facilitate the exhibition of minute doses of the salt; f℥j contains gr. $\frac{1}{2}$; when long kept, or exposed to light, the oxy-muriate is decomposed, and *calomel* is precipitated; (see *Hydrarg*: *Oxymurias*:) or, what is more dangerous, it is sometimes deposited in crystals without decomposition; a small portion of muriate of ammonia in the solution, prevents this precipitation. DOSE, fʒss to fʒij, in an infusion of linseed.

LIQUOR PLUMBI SUB-ACETATIS. L.

LIQUOR SUB-ACETATIS LITHARGYRI. D.

Aqua Lithargyri Acetati, P.L. 1767.

Solution of Sub-acetate of Lead: *olim*, *Extract of Saturn.*

This preparation was introduced by M. Goulard of Montpellier, hence it has been commonly known by the name of *Goulard's Extract.* QUALITIES. It is of a greenish straw colour, and has an austere, sweetish taste; when kept it deposites a quantity of oxyd, and becomes lighter coloured. CHE-

mical Composition. It is a saturated solution of the sub-acetate of lead. consisting, according to Berzelius, of one proportional of acid, and three proportionals of oxide of lead; hence its name is correct. It is the only instance with which we are acquainted of a real sub-salt being soluble in water. **Incompatible Substances.** *Alkalies* and *their carbonates* precipitate a white sub-salt; *alkaline sulphates* and *sulphurets; mucilage*. *Spring Water*, from the salts which it contains, produces with it a very milky and turbid appearance; and even when *distilled*, in consequence of the carbonic acid diffused through it, it occasions precipitation. The Surgeon will remember that the *Linimentum Saponis* cannot be mixed with it, without mutual decomposition; *See Sapo*. **Medical Uses.** It is only used externally, in superficial and phlegmonic inflammations of the skin, and in herpetic affections. It has been a question whether *Lead*, in any form, should ever be applied to an open wound, or to an abraded surface;* as a general rule, it should not certainly be applied to such as are recent, nor to those whose character indicates a diminished state of vitality in the parts, and exhibits a disposition to gangrene. The abuse of Saturnine lotions has been frequently descanted upon by foreign writers, and, among the evils which are supposed to be thus induced, impotence is mentioned as one of not unfrequent occurrence. See *Institutioni di Medicina Forens: di Tortosa, vol.* 1, *p.* 58. also *Fritze Compend: sopra le Malat: Vener: p.* 189, and *Monteggia Annotat: sopra i Mali Venerei*, p. 36. There is a paper in the third volume of the *Medical Transactions*, by Dr. Reynolds, in which the case of a gentleman is detailed, who brought on a temporary paralysis of the *Sphincter Ani*, by freely using Goulard's lotion for the cure of the Piles. The value of Saturnine applications in common inflammation most probably arises from a partial paralysis of the nerves of the part, produced by the sedative agency of the lead.

LIQUOR PLUMBI SUB-ACETATIS DILUTUS. L.

As the former preparation is very rarely employed in its concentrated form, the College has directed its dilution, and added a portion of spirit, with a view to accelerate its evapo-

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* **Virgin's Milk.** A preparation is sold under this name, which is a *sulphate of lead*, and is prepared as follows. To a saturated solution of *Alum*, add of *Goulard's extract* one third part. Shake them together;—see *Benzoinum* for a very different cosmetic, bearing the same name.

ration, and thus to produce a refrigerating effect; but for such a purpose the quantity of spirit is far too small.

LIQUOR POTASSÆ. L. AQUA POTASSSÆ. E.

AQUA KALI CAUSTICA. D.

Aqua kali puri. P.L. 1787. *Lixivium Saponarium,* 1745.

QUALITIES. A limpid, dense, colourless solution; a pint should weigh ℥xvj; when rubbed between the fingers it feels soapy, in consequence of a partial solution of the cuticle. The solution, as usually prepared, contains small portions of muriate and sulphate of potass, silica and lime; but these incidental impurities do not invalidate its virtues; it ought not to effervesce with acids. MED. USES. Antacid, diuretic, alterative, and lithonthriptic; and externally, when diluted, it acts as a stimulating lotion,* and if concentrated, as a caustic; see *Potassa Fusa.* The operation of this and other alkaline remedies, have at different periods been celebrated as powerful lithonthriptics, and whilst experience has in some cases confirmed the value of the practice, it has in others proved no less decidedly its mischievous agency; these contradictory results are at length capable of explanation, for Chemistry has drawn aside the vail that has so long obscured the history, origin, and cure of calculous diseases, and has demonstrated that these extraneous bodies vary in composition, and are consequently very differently affected by the same chemical solvents; but this subject has already been so fully discussed in the first volume of this work, under the chapter on "*Antilithics and Lithonthriptics,*" that it is unnecessary to dwell upon it in this place.

It has also been found highly useful in the cure of several species of cutaneous affections, as in Lepra, Psoriasis, &c. which diseases generally appear to have some connèxion with a morbid state of the digestive functions; see *Form.* 149. DOSE, of the solution of potass, ♏x to f℥ss, in veal broth,† or table beer; this latter vehicle disguises its nauseous flavour completely. In many cases the infusion of some bitter tonic will be the most eligible liquor in which it can be exhibited, especially where our object is to promote its absorption: the theory of such a combination has been already explained in the first vol. of this work, *page* 186. Officinal Prep. *Potassa fusa*, L.E.D. *Potassa cum calce*, L.E.D. *Liquor Sulphureti Kali* D. *Antimonii Sulphuretum præcipitatum*, L.E.

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* HANNAY'S LOTION. This famous nostrum for the prevention of venereal infection, was nothing more than a solution of caustic potass.

† Dr. CHITTICK'S REMEDY FOR THE STONE. This celebrated *nostrum* consisted of a fixed alkali in veal broth; the broth was usually made by his patients, and sent to him fresh every day, in order to be medicated. A.D. 1766.

LIQUOR POTASSÆ SUB-CARBONATIS. L.

Aqua Sub-carbonatis Kali. D.
Aqua Kali præparati, P.L. 1787.
Lixivium Tartari, 1745.
Oleum Tartari per deliquium, P.L. 1720.

Qualities. It is a clear, colourless, and inodorous solution; *Spec. Grav.* 1·446. Dose, ♏x to fʒj. See *Potassæ Sub-carbonas*, and *Form*: 39, 41.

[LIRIODENDRON TULIPIFERA.

W. II. 1254. *Bw. II.* 107. *Bn. I.* 92. *Cortex.*
Tulip-tree. American Poplar. The Bark.

A beautiful flowering tree indigenous in America, and growing plentifully in all parts of the country, from New-England to Florida. Sensible Properties. The bark is rough and fibrous; *Colour*, dingy white, or clay colour; *Taste*, bitter, aromatic, and when chewed for some minutes, somewhat pungent. Chemical Composition. Bitter extractive, resin, gum-resin, mucus, essential oil, and a small proportion of lime. By treating a quantity of the dried bark with alcohol, I obtained a greater proportion of resinous extract (one-twelfth) than it would appear to contain from the experiments of Dr. Rogers; but the difference may have been owing to that of the age and condition of the bark subjected to experiment. From the large quantity of gum and mucus obtained by Dr. R. it is more than probable that in his experiments he used the fresh bark. Solubility. Partially soluble in alcohol, proof spirit, and water; diluted alcohol is its best solvent. Medical Qualities. *Stimulant*, *aromatic*, *tonic*, and *diaphoretic*. It has been highly extolled for its tonic virtues, particularly for its efficacy in the cure of intermittent fevers. Dr. J. Young and Governor Clayton, the most zealous advocates for the *liriodendron*, usually exhibited it combined with other vegetable substances, such as oak-bark, dog-wood, &c. so that their observations serve rather to confirm the principles laid down by Dr. Paris, with regard to the joint operation of substances of a different nature, than to prove that the *liriodendron* possesses, in itself, very active properties. This remark, however, is not intended to depreciate its medicinal properties, but to guard against the fallacy of ascribing to it those which it does not possess. It is not the less valuable because it operates most promptly and conspicuously, when combined with other substances; nor because its influence is excited in giving energy to their action. The aristolochia serpentaria, which in its medicinal effects is not very unlike this bark, is not often separately administered, yet all acknowledge its efficacy as an auxiliary, in combination with other vegetable tonics. The use of this article is indicated in the chronic and passive stages of such diseases as paralysis and rheumatism, and in fevers of an asthenic type; it being more heating and stimulating than almost any other vegetable sudorific and tonic. The Magnolia glauca (swamp sassafras, or sweet bay,) is another American tree, which furnishes in its bark a tonic and aromatic very closely allied to the tulip-tree bark. Doses. ʒss to ʒj in substance; ʒj of the tincture prepared with diluted alcohol; ℥j to ℥ij of the decoction. These may be administered every two hours.

LOBELIA. *Pentandria Monogynia.*

There are a number of Species belonging to this genus, but the only one worthy of notice is the

LOBELIA INFLATA.

W. I. 946. *Bw. I.* 177. *Bn. I.* 181. *Herba.*

Indian Tobacco. Emetic-weed. The Plant.

Specific Character. An indigenous annual plant, grows in great abundance in dry uplands, particularly in stubble fields of rye and barley; it rises to the height of fifteen or twenty inches; in July or August it puts forth a solitary blossom of a pale blue colour; its capsules are inflated and filled with small seeds. It should be gathered for use when in flower. Solubility. It yields its virtues to proof spirit and to water. Sensible Qualities. It is lactescent, like many others of its genus. When chewed, it communicates to the mouth a burning pungent sensation, which remains long in the fauces, resembling the effect of green tobacco. CHEMICAL COMPOSITION. It contains "caout chouc, extractive, and an acrid principle."—*Bigelow.* MEDICAL USE. The effects of this plant are powerful, but exceedingly various, depending upon the preparation, and the quantity administered. In too large doses it is a deadly narcotic, producing alarming prostration, incontrollable vomiting, trembling, cold sweats, and death. When given in suitable doses, it has been found efficacious as an antispasmodic, expectorant, sudorific and diuretic. It is too violent in its operation to be used as an emetic, when milder emetic substances can be obtained. Dr. Bigelow very justly represents its effects to be analogous to those of tobacco. Most writers, who have noticed this plant, have classed it with emetics, and when given in large doses it will seldom fail to act promptly upon the stomach, but it should not be forgotten, that this action is secondary or symptomatic of the primary impression upon the brain, like that caused by tobacco, and by large doses of many other narcotic poisons. For this reason, it is at least questionable, whether its use as an emetic can be justified. There are those who, from its uncertain and sometimes deleterious operation, altogether denounce the internal exhibition of tobacco; and although the same objections might be urged against the Lobelia inflata, still, when it is recollected that it may also be extended to the whole tribe of narcotic vegetables, (for there are few which in the most judicious hands do not sometimes excite unexpected and alarming symptoms,) it seems more advisable to exercise precaution by commencing its use in small doses, till the strength of the preparation and the susceptibility of the patient be ascertained, than to discard an active remedy, because it is active, and which, by further observation, may be found to possess merit peculiar to itself. It was long ago known that the *indian tobacco* was taken by the aborigines of the country in order to produce vomiting, but its virtues were made known to the profession, principally by the experiments of the Rev. Dr. Cutler, who made use of it in his own case for the relief of asthma. He had, during ten years, made trial of a great variety of the usual remedies for that disease with but little benefit. He took the saturated tincture of lobelia in frequent and repeated doses of a table spoonful, till the paroxysm abated, which he represents to have been immediately. It has since been used and recommended by many respectable physicians as an emetic and expectorant in pulmonary and bronchial diseases, and in croup. Every part of the plant possesses the same medicinal properties, but the fresh leaves have been regarded as the most active. OFFICINAL PREP. The tincture prepared by digesting ℥ij of the plant in oj of proof spirit. Dose ʒij to ʒiv. It has also been administered in substance and in infusion, but the tincture is the most eligible preparation.

LYCOPUS VIRGINICUS. *W. I.* 121. *Planta.*

Bugle-weed. Water-Horehound. The Plant.

Specific Character and Description. Leaves, broad, lanceolate, serrate, narrow, and entire at the base. Calyx shorter than the seed, spineless. *Root*, perennial, creeping; *Stem*, herbaceous, often throwing out suckers at the base, a foot or eighteen inches high, quadrangular, with obtuse angles, pubescent, simple, or sparingly branched. *Leaves*, subsessile, smooth, coarsely serrate, often, as well as the stem, of a purplish colour, flowers in whorls, but less crowded than in the Lycopus Europæus.* *Calyx* much shorter than the corolla, segments acute, but not terminating in spines. *Corolla* slightly punctate, white; tube a little verticose. *Seed* projecting beyond the calyx when ripe.—*Torry*. Sensible Properties. *Odour*, peculiar; *Taste*, mawkish, nauseating and slightly bitter. Solubility. Its medicinal properties are imparted to boiling water. Medical Use. It has obtained considerable popularity as a remedy for the symptoms of incipient phthisis pulmonalis, particularly for that of Hæmoptysis, and there is sufficient proof of its having frequently produced very beneficial effects. Drs. Pendleton and Rogers of this city have published the results of their experience with it, and illustrated its efficacy by a number of cases given in detail.† Since the publication of their paper, I have received a valuable communication from Dr. Rogers, on the same subject, in confirmation of his previous opinion. Dr. J. M. Smith, one of the consulting physicians of the Hospital of the New-York State Prison, informed me, that the bugle-weed had been prescribed pretty extensively in that institution, and not without frequently producing happy effects. From all the information I have been able to collect relative to its operation, I am of opinion, that it is one of the feeblest vegetable narcotics, possessing qualities more active than would be inferred from its sensible properties, and sufficiently so to lessen the frequency of the pulse, diminish irritation, and allay cough; that it partakes of the medicinal character of Digitalis, Sanguinaria canadensis, and Spigelia Marilandica, but is probably less active than either of them.* It does not appear to possess much astringency. It is found most useful when exhibited after febrile excitement has been subdued or moderated by depletion. The infusion prepared by digesting ʒj of the leaves and stalks in oj of boiling water may be taken as a common drink.—I.]

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* The similarity of these two species renders it necessary to pay particular attention to their distinguishing characteristics, for as the *L. europæus* grows much more abundantly in the vicinity of New-York, than the *Virginicus*, the former is most commonly offered for sale, and represented as the genuine bugle-weed.

† New-York Medical and Physical Journal. Vol. I. page 179.

LYTTA. L.

Lytta Vesicatoria.

Cantharis Vesicatoria. E. Cantharis. D.

Blistering or Spanish Fly. Cantharides.

The chemical history of cantharides is still involved in much obscurity; the blistering principle has been obtained by Robiquet in a separate state, when it assumes the form of small crystalline plates, having a micaceous lustre; Dr. Thomson has given to it the name of *Cantharadin*. When pure, it is insoluble in water, but it is rendered soluble by the presence of a yellow matter which exists in native combination with it; it is very soluble in oils. Medical Uses. Pow-

* Another vegetable, which probably possesses properties similar to these plants, is the Actæa Racemosa, or Rattle-weed. Dr. T. S. Garden describes its salutary effects in his own case, and in that of a patient of his, both of whom he represents as having been in the most alarming condition with symptoms of pulmonary phthisis. He says, "I can ascribe the degree of health which I enjoy at present to nothing but the use of this medicine, aided by suitable regimen; and nothing but utter despair, and entire extinction of all hope of recovery, together with a want of confidence in all others, induced me, upon the bare testimony of vulgar report, to hazard the experiment." He describes its operation as tonic and narcotic; "like the digitalis, it disorders the sensorium, and operates in a powerful manner on the secreting and absorbent systems. When exhibited in a full dose it prostrates in a distressing degree, producing nausea, vertigo, pains of the extremities, anxiety, dilatation of the pupils, quick small pulse, with universal restlessness and uneasiness. These effects are immediate and transitory. Its ultimate and remote operation is the converse of the above. It certainly possesses the power in an eminent degree of lessening arterial action, and at the same time, imparting tone and energy to the general system. The criterion by which I am governed in its exhibition are its effects upon the head. An ounce or two of the tincture prepared from the root may be administered once or twice a day to most patients with safety."* Would not the root in substance or the alcoholic extract be preferable to the tincture?—I.

* *Medical Recorder, Vol. VI. page* 609.

erfully stimulant and diuretic,* (*Form.* 49.) In consulting the works of Dioscorides, Galen, and Pliny, we shall find that they entertained a notion that the *virus* was in the bodies only of the fly, and that the head, feet, and wings contained its antidote. Hippocrates prescribed them internally in dropsy, jaundice, and amenorrhœa; and yet in the end of the sixteenth century, Dr. Groenvelt was charged and sued† for giving them inwardly in substance; he published his vindication in a small tract, entitled "*De tuto Cantharidum usu interno*;" the issue, says Quincey, (*Pharm. p.* 152,) ruined the unhappy doctor, but taught his envious prosecutors the safety and value of his practice. DOSE, in substance, not exceeding gr. j, with opium or hyoscyamus. A strong decoction of the Lyttæ in Oil of Turpentine furnishes a most powerful Epispastic, and may be easily applied by means of dossils of lint. OFFICINAL PREP. *Tinct. Lyttæ.* L. *Emplast. Lyttæ.* L. *Cerat. Lytt.* L. *Unguent. infusi. Cantharid. vesicat.*E. *Unguent. Cantharid.* D. The flies do not lose their virtues by being kept; it is however curious that even these acrid insects are soon reduced to dust by others feeding upon them; since, however, the inert parenchymatous portion is alone selected by them, the residue is extremely active.

[There appears still to be a professional prejudice against the internal use of Cantharides; nevertheless they operate as a peculiar and highly valuable stimulant, and may be given with more safety than most medicines of equal power, because their effects are so immediately manifested on the urinary organs, or on the mucous membranes of the alimentary canal, producing strangury in one case, and bloody stools and tenesmus in the other. These symptoms, though painful, are in their incipient stage comparatively unimportant in the diseases in which cantharides are most useful, for they may always be readily arrested and easily subdued.

I shall say nothing of the efficacy of this medicine when given internally in local diseases, and for which it is pretty generally prescribed, but only urge the propriety and importance of its exhibition in fevers. My observation of its constitutional effects has been chiefly confined to typhus fever and delirium tremens. In that form of typhus which is characterized by a dry and sometimes cool skin, slow and languid circulation, brown dry tongue and universal torpidity of the secreting system, the tincture of cantharides, in doses of from ten to fifteen drops every three hours, till either its local or general effects are apparent, is a medicine of unequalled efficacy; and also, in cases where the pulse is feeble, irritable, and quick, accompanied with symptoms of great nervous derangement, its operation is often sudden and salutary. Its action on the heart and larger arteries is extended to the extreme vessels, the circulation is equalized, the skin becomes warm, soft, and moist, and as the healthy functions of the blood-vessels are thus restored, the catenation of nervous derangement, which constitutes the most prominent and obdurate symptoms of the disease, is interrupted or destroyed. In delirium tremens, when administered in the same manner, the operation of cantharides is equally apparent and beneficial. This disease is most commonly owing to sudden indirect debility, or in the language of Brown, to diminished excitability, and the cantharides is admirably suited to the exigencies of the system under such circumstances. The irritability of stomach, so troublesome in this complaint, is sometimes more speedily allayed by this than any other remedy.

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* It formed the basis of the once celebrated diuretic, invented by Tulpius, and called *Lithonthripticum Tulpii*, from its supposed efficacy in Stone. The other ingredients were Cardamoms, made into a Tincture with Rectified Spirit, and Spirit of Nitric Ether.

† He was cited before the censors of the College of Physicians in 1693, and committed to Newgate by a warrant from the President, but he was acquitted upon the plea that *bad practice must be accompanied with a bad intention to render it criminal.*

The cantharides should always be discontinued so soon as they produce symptoms of specific local effect, and resumed again at discretion. Nor is it always necessary to continue their exhibition until such symptoms appear; their constitutional effects are not unfrequently first perceptible in the action of the blood-vessels, in the warmth and moisture of the skin, and in the subsidence of nervous irritation. Should stranguary, however occur from them, in the diseases above mentioned, it need not be regarded as an unfavourable symptom.

LYTTA VITTATA. *Fabricius.*

CANTHARIS VITTATA. *Olivier.*

Potato Fly. American Cantharides.

Specific Character. It resembles the imported fly, but is smaller and of different colour. "The head is a very light red, with black antennæ, the elytra or wing-cases are black, margined with pale yellow, and a stripe of the same colour extends along the middle of them: the tarsi have five articulations; the mouth is armed with jaws, and furnished with tarsi. In the abdomen of this fly is a hard white substance about the size of a grain of wheat, which, when powdered, appears like meal, and when rubbed with water forms a milky emulsion." (*Cox.*) This species of cantharides is found in all parts of the United States, some seasons in great abundance; so much so that they might be collected in sufficient quantity to supersede the necessity of importing the cantharides in common use. They feed most commonly, but not exclusively, upon the potato-vine. MEDICAL USE. It has been fully demonstrated, by the experiments of Dr. Isaac Chapman and the elder Dr. Barton, that they are not inferior to the Lytta Vesicatoria for all the purposes for which they are used. Dr. Barton says, "from the frequent employment of the two articles, I cannot hesitate to prefer the American to the foreign fly. Long keeping, provided it be carefully kept, does not materially impair the blistering property of the Lytta Vittata. At the end of three or four years after being collected, I have found it equal in power to the best shop cantharides."*

The potato fly has been analyzed by Dr. J. F. Dana. By treating it with water, alcohol, and sulphuric ether, he obtained minute crystalline plates. They were white, pearly, and excited itching and redness when rubbed upon the skin. Dr. Dana supposed them to be cantharidin.†—I.]

MAGNESIA. L. MAGNESIA USTA. D.
Calcined Magnesia.

QUALITIES. *Form*, a white, very light, soft powder; *Specific gravity*, 2.3; it turns to green the more delicate vegetable blues. SOLUBILITY. Although it requires 2000 times its weight of water to hold it in solution, yet it has the property of considerably increasing the solubility of camphor, opium, and resins in the same fluid; it is soluble in solutions of the alkaline carbonates, but not in those of caustic alkalies. CHEMICAL COMPOSITION. It is an oxyd of a peculiar metal. MEDICAL USES. Antacid, and when acidity prevails, purgative: it is preferable to the carbonate whenever the bowels are distended with flatus, (*Form:* 150;) in other respects, its virtues are the same. See *Magnes. Carb.* INCIDENTAL IMPURITIES. It ought not to effervesce with acids, and if magnesia and muriatic acid be placed at one time, in separate cups, in a scale of a balance, no diminution of weight should take place on mixing them. Lime is detected by its solution in dilute sulphuric acid affording a precipitate with oxalate of ammonia; the *sulphuret of lime* betrays itself by yielding, when moistened, the smell of sulphuretted hydrogen.*

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* Collections for an Essay toward a Materia Medica of the United States, Page 22.

† American Journal of Sciences and the Arts, Vol. II. p. 137.

MAGNESIÆ CARBONAS. L.

CARBONAS MAGNESIÆ. E. MAGNESIA. D.

Olim, Magnesia Alba.

Carbonate of Magnesia. vulgo, *Common Magnesia.*

This preparation was formerly considered by Mr. Phillips to be a mixture of carbonate and sub-carbonate of magnesia, an opinion which he has lately retracted; it is, says he, evidently a *carbonate*, i. e. magnesia combined with one proportion of carbonic acid, or forty-eight of carbonic acid to forty-three of magnesia. Dr. Thomson entertains a different opinion; he observes that it seems to be a mechanical mixture of carbonate of magnesia, caustic magnesia, and perhaps of hydrated magnesia; he found too great a diversity in its composition to permit the conclusion that it was a definite chemical compound; in a specimen purchased at Glasgow, he also found six per cent. of *sulphate of lime*. I take this opportunity of stating that in some specimens which I have examined, I have also detected portions of *gypsum;* and from the experiments of Dr. Percival, it appears that if *hard water* be employed for its preparation, it will be less light, and will contain a portion of lime. Magnesia will be also liable to contain traces of siliceous earth, derived from the alkali used in producing it. INCOMPATIBLE SUBSTANCES. *Acids, and acidulous salts; alkalies and neutral salts; alum; cream of tartar; nitrate of silver; acetate of mercury; oxy-muriate of mercury; super-acetate of lead; sulphates of zinc, copper, and iron.* MED. USES. Antacid, and purgative. In cases of lithic calculi, carbonate of magnesia, in doses of ℈j to ʒj, has been proposed by Mr. Hatchett, as a valuable substitute for alkaline remedies. Its insolubility must render its absorption equivocal; its beneficial operation must therefore principally depend upon its neutralizing any excess of acid in the primæ viæ, and in this way there can be no doubt of its lithonthriptic agency; "but," says Dr. Marcet, "such is the tendency which the public has to overrate the utility of a new practice, or to take a mistaken view of its proper application, that there is every reason to believe that the use of magnesia has of late years become a frequent source of evil in calculous complaints. *See vol.* i. *p.* 155. Officinal Prep. *Hydrarg. cum Magnesia.* D. *Magnesia.* L.E.D. Adulterations. *Chalk* may be detected by adding dilute sulphuric acid to a suspected portion, when, should any be present, the solution will be loaded with a white and insoluble precipitate; *gypsum*, by boiling a sample in distilled water, and assaying the solution by a barytic and oxalic test.*

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* *Magnesia* was originally a *general* term, expressive of *any* substance which had the power of attracting some principle from the air, from *Magnes*, the Loadstone. The peculiar body which we now denominate *Magnesia*, was first sold as a *panacea*, by a canon at Rome, in the beginning of the seventeenth century, under the title of Magnesia alba, or Count Palma's Powder.

MAGNESIÆ SULPHAS. L. Sulphas Magnesiæ. E.D.

Magnesia Vitriolata. Sal catharticum amarum.

Bitter purging salt. Epsom salt.

Qualities. *Form*, small needle-like crystals. *Taste*, bitter and nauseous; when pure, it effloresces. Chemical Composition. In its crystallized state, it may be considered as composed of 1 proportional of dry sulphate (Magnesia 18·5, and sulphuric acid 37·5) and 7 proportionals of water. Solubility. f℥j of water dissolves ℥j, and the solution measures fʒxvj¼; it is insoluble in alcohol. Incompatible Substances. *Muriates of ammonia, baryta,* and *lime; nitrate of silver; subacetate,* and *acetate of lead. The fixed alkalies* and *their carbonates*, precipitate from it magnesia and its carbonate. *Phosphate of soda* occasions no immediate precipitate, unless ammonia be present, in which case the triple *ammoniaco-magnesian phosphate* will be produced. The addition of ammonia, which in the form of *Spiritus ammoniæ aromat.* is not unfrequently prescribed in conjunction with a solution of this sulphate, forms also a triple salt, and a portion of magnesia is precipitated: whenever therefore this ammoniacal stimulant is ordered with a purgative salt, the scientific physician will prefer a solution of the sulphate of soda. FORMS OF EXHIBITION. Dissolved in the *Infusum Rosæ*, or in a suitable quantity of beef tea, gruel, or any aqueous vehicle, its cathartic powers are increased by dilution, as well as by the addition of a little common salt; *magnesia* renders the taste of its solution less nauseous; and tartarized antimony quickens its operation. DOSE, ʒss to ℥ij, taken either at once, or in divided doses. *Form.* 37, 69, 72, 76. OFFICINAL PREP. *Enema Catharticum. Enema Fœtid.* D. ADULTERATIONS. *Sulphate of Soda* is often substituted for this salt, which it may be made to resemble by stirring it briskly at the moment when it is about to crystallize; the fraud may be detected by a precipitation not ensuing on adding carbonate of potass; if only a part of the salt be sulphate of soda, the degree of sophistication can be learnt by the quantity of the precipitate formed; 100 parts of sulphate of magnesia, if pure, will yield between 30 and 40 of the dry carbonate. Epsom salt, as it commonly occurs, contains *muriate of magnesia*, which disposes it to deliquesce, but lately this salt has appeared in the market in a state of great purity and beauty; the mode of purification is founded upon the well-known chemical law, that *a saturated solution of one salt is still capable of dissolving another;* in the present instance, therefore, the impure crystals are washed in a saturated solution of the same sulphate, which, although unable to act upon its kindred salt, can dissolve with facility the muriate, and any other saline contamination. I confess, however, that I am rather induced to regard this process as chemically ingenious than as medicinally useful, for the usual saline impurities of Epsom salt are not only harmless, but capable of increasing its purgative powers; the *double refined* sulphate is certainly less efficient as a cathartic. The presence of the *muriate* may be at once detected by dropping upon the suspected sample some sulphuric acid, by which the disengagement of muriatic acid vapour will be produced. Since the publication of the fourth edition of the present work, I have received samples of the Sulphate of Magnesia, prepared by Mr. West of Lymington, and I can confidently recommend the article to the profession; he contrives to obtain them in large and beautiful crystals.

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* Dalby's Carminative. This consists of carbonate of magnesia ℈ij, oils of Peppermint, ♏j, of Nutmeg, ♏ij, of Anniseed ♏iij, of the tinctures of Castor ♏xxx, of Assafœtida ♏xv, Tincture of Opium, ♏v, Spirit of Pennyroyal ♏xv, of the compound tincture of Cardamoms ♏xxx, Peppermint water f℥ij. There are cheaper compositions sold under the same name. In examining the pretensions of this combination, it must be allowed that it is constructed upon philosophical principles; this however is no reason why the physician should recommend it; the mischievous tendency of a quack medicine does not depend upon its composition, but upon its application; we ought to remember, says an eminent physician, that in recommending this nostrum we foster the dangerous prejudices of mothers and nurses, who are unable to ascertain the circumstances under which it should be given, or even the proper doses; if its composition is judicious, why do not physicians order the same in a regular prescription, rather than in a form in which the most valuable remedy will be abused?

which cannot be mistaken for those of oxalic acid, a circumstance of no small importance to the drug vender; the form of these crystals is that of a square prism, having its edges replaced, and commonly terminated by a pyramid of four planes; the only cleavage is parallel to one of the diagonals of the prism.

MANNA. L.E.D.

(Fraxinus Ornus. *Succus Concretus.*)

Manna.

Qualities. *Form*, flakes of a granular texture; *Colour*, whitish, or pale yellow; *Odour*, slight, but peculiar; *Taste*, nauseous sweet, with some degree of bitterness. Chemical Composition. This concrete vegetable juice, besides sugar, appears to contain mucilage and extractive, to which its taste and other peculiar properties are owing. Solubility. It is entirely soluble in water and alcohol. Med. Uses. It is now merely regarded as a laxative for children, or for weak persons. It generally requires some laxative adjunct, as castor oil, with which it may be combined by the medium of mucilage. Dose, for children, from ʒj to ʒiij, in warm milk. Officinal Prep. *Confectio Cassiæ.* L.E.D. *Enema Cathart.* D. *Enema Fœtid.* D. *Syrup. Sennæ.* D. Adulterations. There are several varieties in the market, the best of which is flake manna, *manna cannulata*, in a stalactitic form. An article, entirely factitious, consisting of honey or sugar, mixed with scammony, is sometimes sold for genuine manna, but its colour, weight, transparency, and taste, must instantly lead to its detection.

MASTICHE. L.

(Pistachia Lentiscus. *Resina.*)

Mastich.

The use of this resinous substance is to fill the cavities of carious teeth; a solution of it in oil of turpentine is sold as an odontalgic. The Turkish and Armenian women use it as a masticatory for cleaning the teeth, emulging the salivary glands, and imparting an agreeable odour to the breath. It forms a constituent of the *Dinner Pills*. See *Aloes*. Sonnini tells us that, in Egypt, the smoke of Mastich is supposed to kill any sick person that inhales it.

MEL. L.E.D. Honey.

This well-known substance appears to be merely collected from the flowers, and not elaborated by the internal economy of the insect, for when properly diluted it undergoes vinous fermentation, the product of which is the beverage well known by the name of *Mead;* such a change does not occur in any *animal* substance. The English honey is more waxy than that from the south of Europe. *Virgin honey* is that wrought by young bees which have never swarmed, and permitted to run from the comb without heat or pressure. **Chemical Composition.** Sugar, mucilage, wax, an acid, and occasionally some essential oil. *Clarified Honey*, (*Mel Despumatum.* L.D.) has not the agreeable smell of crude honey ; it does not however ferment so readily, nor is it so apt to gripe. **Uses.** It is principally employed for forming several officinal preparations, i. e. *Mellita*, viz. *Mel Boracis.* L. *Mel Ros.* L.D. *Oxymel.* L.D. *Oxymel Colchici.* E. *Oxymel Scillæ.* L.D.* **Adulterations.** *Flour* may be detected by diffusing the honey in tepid water, by which it will be separated, and, by subsequent boiling, converted into a thick paste.

MENTHA PIPERITA. L.E.D.

Mentha Piperitis. D. *Peppermint.*†

All the qualities of this plant depend upon an essential oil and camphor; it readily and strongly impregnates either water or spirit, by infusion; its infusion, and the water distilled from the plant, are carminative and antispasmodic; they also serve as vehicles for other medicines, to correct their operation, or to disguise their flavour. **Officinal Prep.** *Aq. Menth. Piperit.* L.E.D. *Spir. Menth. Pip.* L.D. *Ol. Menth. Pip.* L.D. If this plant be cut in wet weather, it turns black, and is worthless.

MENTHA VIRIDIS. L. Mentha Sativa. D.

Spearmint.

Cold water extracts the more agreeable and active parts of mint in a few hours ; a longer maceration extracts the grosser and less agreeable portions; hot water more quickly extracts its virtues, but if it be boiling it dissipates the aroma. OFFICINAL PREP. *Aq. Menth. virid.* L.D. *Infus. Menth. comp.* D. *Ol. Menth. virid.* L.D. *Spir. Menth. virid.* L.

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* **Honey Water.**—The article usually sold under this name is a mixture of Essences coloured with Saffron ; some add a small quantity of Honey, the effect of which is to communicate a clamminess which retains the scent longer.

† **Essence of Peppermint.**—A spirituous solution of the Essential Oil, coloured green by Spinach leaves.

MEZEREI CORTEX. L.E.D.

(Daphne Mezereum. *Radicis Cortex.*)

Mezereon.

The inner bark of this plant, when fresh, is corrosive, and even vesicatory; the fruit is equally so; its virulence is counteracted by camphor. It is now seldom used except as an antivenereal remedy. From its pungency it is one of the substances used by fraudulent brewers to communicate a strong flavour to their beer. Where a discharge from issues cannot be kept up by the common means, it is said that the introduction of a little of this bark, instead of the pea, will in a few hours produce the desired effect. OFFICINAL PREP. *Decoct. Sarsaparill. comp.* L. *Decoct. Daphnes. Mezerei.* E. The *Daphne Laureola* is very generally sold for Mezereon.

MISTURÆ. L.E.D. *Mixtures.*

The principles upon which this form of preparation is to be constructed, are fully detailed in the first volume of this work, page 239.

Officinal Mixtures.

MISTURA AMMONIACI. L. This mixture is expectorant, and may be exhibited with tincture of squills, &c. (*Form.* 115, 136.) It is slightly curdled by *vinegar*, *oxymel*, *æther*, and *oxy-muriate of mercury*.

MISTURA AMYGDALARUM. L. *Emulsio Amygdali communis.* E. *Lac Amygdalæ.* D. It is a useful demulcent and diluent, and forms an elegant vehicle for more active medicines. *Incompatibles—Acids, Oxymel, Syrup of Squill, Spirit, and Tinctures*, unless added in very small quantities, decompose this mixture; *tartaric acid, super-tartrate of potass; super-sulphate of potass*, and *oxy-muriate of mercury*, also disturb it. *Form.* 137.

MISTURA ASSAFŒTIDA. L. A nauseous preparation; and where its use is indicated, it will be more judicious to prescribe it as an extemporaneous mixture. See *Assafœtida.*

Mistura Camphoræ. L. This solution of camphor forms an elegant vehicle for more active stimulants. The camphor is separated from the water by a solution of pure potass, by sulphate of magnesia, and by several saline bodies. See *Form.* 7, 24, 25, 32, 47, 72, 116, 117, 123.

Mistura Cornu Usti. L. *Decoctum Cornu Cervini.* D. This is nothing more than a simple diffusion of phosphate of lime in a thin mucilage—*Cui bono?*

Mistura Cretæ. L.D. A common and useful remedy in diarrhœa, and may be combined with opium, catechu, or any other astringent. *Form.* 52.

Mistura Ferri Composita. L. This is nearly the same as the celebrated anti-hectic mixture of Dr. Griffith; to the result of the decompositions which take place from the mixture of its ingredients, it is wholly indebted for its medicinal energies; thus, a *proto-carbonate of iron*, is formed, i. e. the iron combined with carbonic acid is at its *minimum* of oxidation, which renders it more active than the common carbonate, and probably less stimulant than the sulphate; this product, by means of the saponaceous compound formed by the union of the myrrh with the excess of alkali, is *partly* diffused and suspended in the mixture, and *partly* dissolved, whilst at the same time a *sulphate of potass* is formed, which serves to correct the astringent influence which iron is apt to exert upon the bowels. The iron in this preparation is disposed to combine with an additional proportion of oxygen, hence its ingredients should be quickly mixed together, and it ought to be considered as an extemporaneous preparation; it should be preserved in a closely stopped vessel. Its change of colour will generally indicate its loss of efficacy. This preparation must be considered as permanently serviceable in Chlorosis, and the numerous sympathetic affections connected with it.

Mistura Moschi. This is an eligible form for the administration of Musk. *Dose,* f℥j—f℥ij, to which may be added extemporaneously ammonia, æther, and other diffusible stimulants.

The Dose of the above mixtures is f℥j to f℥ij twice or thrice a day. See *Form.* 96.

MOSCHUS. L.E.D. *Musk.*

Qualities. *Form,* grains concreted together, dry, yet slightly unctuous. *Colour,* deep brown with a shade of red; *Odour,* aromatic, peculiar, diffusive, and durable; and it has the curious property, when added in a minute quantity, to augment the odour of other perfumes without imparting its own; this renders it a valuable article in perfumery, on which account it is a usual ingredient in lavender water. *Taste*, bitterish and heavy. Chemical Composition. Resin combined with volatile oil, and a mucilaginous extractive matter, with small portions of albumen, gelatine, muriate of ammonia, and phosphate of soda. Solubility. Boiling water dissolves it perfectly; rectified spirit takes up most of its active parts, although the odour is only discovered upon dilution; sulphuric æther is its most complete menstruum. Incompatible Substances. The solutions are decomposed by *Oxymuriate of Mercury*; *Sulphate of Iron*; *Nitrate of Silver*; and the *Infusion of Yellow Bark*. Med. Uses. Stimulant and antispasmodic. As early as the time of Meade, it was employed in typhus fever; Pringle administered it in gout of the stomach, a practice which received the concurrence of Cullen; conjoined with ammonia, it has been celebrated for its powers in arresting the progress of gangrene, and of imparting fresh excitement to the nervous system. It has been also administered with success in epilepsy, hooping cough, and other spasmodic affections. Forms of Exhibition. The best form is that of bolus, combined with ammonia or camphor, or some other similar remedy, (*Form.* 21;) it may be also administered in a mixture, for which purpose it requires five times its weight of mucilage, consequently the London College has not directed a sufficient quantity to retain the musk in suspension: by previously triturating it with sugar, its minute division is much facilitated. Dose, grs. x to xxx. See *Form.* 22, 30. Officinal Prep. *Mist. Mosch.* L. *Tinct. Mosch.* D. Adulterations. The bag containing the musk should have no appearance of having been opened: the presence of *dried blood* may be suspected, by its emitting, as it inflames, a fetid smoke; *Asphaltum* is discovered by its melting and running before it inflames; the artificial bags are known from the deficiency of the membrane which lines the real musk bags. To increase the weight of the musk, fine particles of lead are very frequently added; this is easily detected, for by rubbing it with water the metallic particles will subside.

Moschus Factitius. *Artificial Musk*, strongly resembling the real, may be formed by digesting fʒss of *Nitric acid*, for ten days, upon ℥j of fetid animal oil, obtained by distillation; to this is to be next gradually added oj of *rectified spirit*, and the whole is then to be left to digest for one month: or—

2. Drop fʒiiiss of nitric acid upon f℥j of rectified oil of amber; after standing twenty-four hours, a black resinous pellicle, exhaling the odour of musk, will be formed.

MUCILAGO ACACIÆ. L.E.

Mucilago Gummi Arabici. D.

This preparation consists of one part of gum and two of water: in preparing it, the dispenser is particularly recommended to pulverize the gum, and never to employ that which is purchased in the state of powder, as it is always impure and incapable of forming a pellucid and elegant solution.* Incompatible Substances. Neither the *strong acids* nor *alcohol*, when considerably diluted, occasion any disturbance in it; but *sulphuric æther* and its *compound spirit*, *the tincture of muriated iron*, and *sub-acetate of lead*, produce very dense precipitates: the *acetate of lead* only occasions decomposition, when an alkaline salt is present in the formula; the *volatile alkali* curdles the mucilage, and *hard calcareous waters* render the mixture difficult, and often impracticable. In the pharmaceutical application of this mucilage, it should be remembered that it contains in its composition an astringent principle, which is perhaps of but trifling consequence, except in the exhibition of some very few active metallic salts, which are certainly decomposed by it, (e. g. grs. x of *nitrate of mercury* are decomposed by ʒij of gum arabic.) It contains also lime in combination with some vegetable acid. Uses: diluted with four times its bulk of water, this mucilage forms a demulcent mixture of appropriate tenacity, which affords a convenient vehicle for several efficient remedies; the pharmaceutical use of this mucilage depends upon the fact of its rendering expressed and essential oils, balsams, resins, gum-resins, resinous tinctures, and fatty bodies, miscible with water, but if a syrup be added, the union will be more perfect: the proportions necessary for this purpose vary according to the nature of the substances; thus *oils* will require about three-fourths their weight, *Balsams* and *Spermaceti* an equal part, *Resins* a double quantity, and *Musk* five times its weight; the following *Formulæ* illustrate this property, 9, 19, 22, 136.

MUCILAGO ASTRAGALI TRAGACANTHÆ. E.D.

Tragacanth Mucilage.

Tragacanth, is strictly speaking, not soluble in water, but imbibes a large portion of it, and swells into a considerable bulk, forming a soft but not a liquid mucilage; on the farther addition of water, a fluid solution may be obtained by agitation, and the liquor is turbid; but on standing, the mucilage subsides, the limpid water on the surface retaining little of the gum;* it differs from all gums in giving a thick consistence to a larger quantity of water, its power in this respect being to that of gum arabic as twenty to one; one part converts twenty of hot water into a stiff mucilage. Tragacanth is not increased, but actually diminished in solubility by the addition of any other gum, accordingly it separates from water with much greater facility when gum arabic is present. This preparation, according to the Edinburgh college, consists of one part of gum and eight of water; the resulting mucilage is stiff, and is principally employed for making *troches*. The Dublin preparation contains four times that quantity of water.

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* If the Gum arabic be adulterated with that of the Cherry-tree, the solution will be ropy, in consequence of the presence of Cerasin. See *Mucilago Tragacanthæ*. (Note.)

MYRISTICÆ NUCLEI. L.E.

NUX MOSCHATA. D. *Nutmeg.*

All the properties of this well-known substance depend upon an essential oil, filling the dark-coloured veins which run through its substance, and which is dissipated by decoction; the other components are starch, gum, wax, and a fixed oil. The oil obtained by expression is improperly called *oil of mace*, for it would appear to be a triple compound of fixed oil, volatile oil, and wax, and which, although limpid when first drawn, soon acquires on cooling the consistence of spermaceti. *Mace* is the involucrum of the nut. MEDICAL USES. Stimulant, and in large doses, as from ʒij to ʒiij, narcotic, frequently producing delirium. *See Cullen Mat. Med.* ii. 204. OFFICINAL PREP. *Spir: Myristicæ.* L.E.D. FRAUDS. Nutmegs are frequently despoiled of their essential oil, by being punctured and submitted to the operation of decoction, the orifices being subsequently closed by powdered sassafras; the imposition is detected by the comparative lightness of the nutmeg, and by its extreme fragility; the holes may also be discovered by carefully examining the surface of the nut, after having steeped it in hot water.

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* This variety of gum, which is characterized by its gelatinizing, but not dissolving, in water, occurs in several vegetable substances; and as it predominates in the Cherry-tree, Dr. John has distinguished it by the name of CERASIN; but as Tragacanth consists almost entirely of this substance, the term TRAGACANTHIN would have been much more appropriate. Although *Cerasin* will not dissolve in pure water, it undergoes solution in that menstruum, at the temperature of ebullition, provided a portion of a mineral acid be added.

MYRRHA. L.E.D. (Arboris nondum descriptæ. *Myrrh.* *Gummi-resina.*)

Qualities. *Form*, irregularly shaped pieces, translucent, of a reddish yellow colour; *Odour*, peculiar and fragrant; *Taste*, bitter and aromatic. Chemical Composition. Resin, gum, essential oil, and some extractive. Solubility. When triturated with soft, or distilled water, nearly the whole appears to be dissolved, forming an opaque, yellowish solution, but by rest the greater part is deposited, and not more than one-third is actually dissolved; its solubility, however, in water, may be increased by trituration with camphor or an alkali; rectified spirit dissolves it, and the resulting tincture, when diluted, becomes turbid, although no precipitate occurs. Med. Uses. Stimulant, as in *Form.* 103. Expectorant, 132, 133, 138. Emmenagogue, 95, 98, 99. Forms of Exhibition. No form is so eligible as that of substance. Dose, grs. x to ℨj. The alkalies, in their crystalline state, when triturated with myrrh, reduce it to the form of a tenacious fluid. Officinal Prep. *Tinct. Myrrh.* L.E.D. *Tinct. Aloes et Myrrh.* E. *Tinct. Aloes Ætherea.* E. *Mist. Ferri comp.* (𝕲𝕷) L. *Pil. Aloes cum Myrrha.* L.E.D. *Pil. Ferri cum Myrrha.* L. *Pil. Galb. comp.* L.D. (𝕭). *Pil. Assafœtid. comp.* E. (𝕭) *Pil. Rhei. comp.* E. (𝕲) Adulterations. It is subject to a variety of frauds, being frequently mixed with adventitious gums, which are to be detected by their foreign odour, their white or dark colour, and by their opacity.

NUX VOMICA. (Strychnus Nux Vomica.)
Nux Vomica.

This seed has not at present a place in the British pharmacopœias; it presents however several points of interest to the physiologist, the physician, and the chemist. Its virulent action upon animals has been long known, and it has been administered in combination with gentian in intermittents,* (*Ludovic. Phar.* p. 113,) and as a narcotic in mania; it also constituted an ingredient in the famous *Electuarium de ovo*, (*Ph. Angl.* p. 263.) Nux vomica has been said to produce benefit in the plague; the German writers have strongly commended it in mania, epilepsy, and hydrophobia; as well as in chronic rheumatism, gout, scrofula, lues venerea, and cutaneous eruptions; in Sweden it is stated to have displayed very beneficial effects in Dysentery. Dr. Fourquier has lately introduced its use in the Hopital de la Charité, in cases of partial paralysis, and it is said, with very great success. The value of the practice has been since confirmed by the experiments of Dumeril, Majendie, Hebreard, Husson, and Asselin. The dose is four or five grains of the powder in pills, during the day. The French codex contains two alcoholic extracts of this substance, the one prepared with a strong spirit (22, 32, Beaumé, i. e. from sp. gr. ·915 to ·856,) is much more active and powerful than that made with a weak spirit, (12, 22, Beaumé, i. e. from sp. gr. ·985 to ·915.) MM. Pelletier and Caventou have discovered in this substance, a peculiar proximate principle, to which its virulence is owing; it was named *Vauqueline*, in honour of the celebrated French philosopher, but in deference to the opinion of the French Academy of Sciences, the discoverers have substituted the name *Strychnia*, because "a name dearly loved, ought not to be applied to a noxious principle." (*Annales de Chimie, vol.* 8 to 10.) Strychnia is highly alkaline, and crystallizes in very small four-sided prisms, terminated by four-sided pyramids; its taste is insupportably bitter, leaving a slight metallic flavour, and is so powerful as even to be perceptible when a grain is dissolved in eighty pounds of water;* it has no smell; it is so extremely active and violent, that in doses of half a grain it occasions serious effects, and in larger ones convulsions and death; it is perhaps the most powerful,† and next to hydro-cyanic acid, the most rapid of poisons; notwithstanding its strong taste, it is very sparingly soluble in water, requiring 6667 parts of that fluid for its solution at 50, and 2500 at 212°. It is very soluble in alcohol, but unlike most of the other vegetable alkalies, is nearly insoluble in æther; with acids it forms neutral and crystallizable salts; these salts, as well as their base, have the singular property of becoming blood-red by the action of concentrated nitric acid. Strychnia exists in native combination in the Strychnus, with an acid which has some analogy with the malic, and which Pelletier and Caventou propose to call the *Igasuric*

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* Sir Hans Sloane published a Paper in the Philosophical Transactions, No. 249, Vol. xxi, p. 44, entitled "An account of the Nux Pepita, or Saint Ignatius's Bean (*Ignatia Amara*, *Lin.*) A Simple in common use in the Philippine Islands, as a Tonic medicine."

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* *Ann: de Chimie et de Phys: x.* 153.

† M. Majendie has killed a dog with one-eighth of a grain, and the editor of the Edinburgh Med: & Surg: Journ: has seen one die in two minutes after the injection of one-sixth of a grain into the cavity of the pleura.

acid, from the Malay name for the bean of St. Ignatius,[*] (Strychnus Ignatius,) in which its properties were first examined. In conformity with such views, the active principle of the tribe of the Strychni is an *Igasurate of Strychnia*;—a fact which suggests the existence of a most singular and striking analogy between the chemical constitution of these narcotico-acrid bodies[†] and that of opium. Dr. Fleming informs us that the Hindoos of upper India are in the habit of adding Nux Vomica in the process of distilling Arrack, for the purpose of rendering the spirit more intoxicating. The London Porter brewers have been accused of the same pernicious practice.

OLEA DISTILLATA. L. OL. VOLATILIA. E. OL. ESSENTIALIA. D.

Distilled, Volatile, or Essential Oils.

The British pharmacopœiæ direct them to be obtained by distillation only; the French codex orders several of them to be prepared by expression. QUALITIES. *Form*, liquid, sometimes, viscid; *specific grav.* various, oil of turpentine, which is the lightest, being only 0·792, whilst the oils of cloves, cinnamon, and allspice, exceed 1·030, and that of sassafras, which is the heaviest, amounts to 1,094; these latter oils hold resin in solution, they of course sink in water. *Odour*, penetrating and fragrant; *Taste*, acrid; they are volatilized at a temperature somewhat below that of boiling water; they are very inflammable. SOLUBILITY. Very soluble in alcohol, forming what are termed in perfumery *Essences*; in water they are very sparingly soluble; the solutions are known in pharmacy under the title of *distilled waters*; they are also dissolved by æther, and the *fixed* oils; when digested with ammonia, some of the less odorous acquire a considerable degree of fragrance, whilst on the contrary, fixed alkalies universally impair their odour; they are rapidly decomposed by nitric and sulphuric acids, and their action is sometimes attended with instant inflammation. Volatile oils, from continued exposure to the air, absorb oxygen, and become resinous, by which they lose their volatility, fragrance, and pungency, hence they should be preserved in small opaque phials, completely full and well stopped. **Med. Uses.** They act as powerful stimulants and aromatics; they remove nausea and flatulence, correct the griping of certain purgatives, and cover the offensive taste of various remedies. See *Aquæ distillatæ*. The following is a list of the species admitted into our British pharmacopœiæ; those designated in *italics* are principally for internal use. Olea *Anisi*, *Anthemidis*, *Carui*, *Juniperi*, Lavandulæ, *Menthæ*, *Piperitæ*, *Menthæ viridis*, Origani, *Pimentæ*, *Pulegii*, *Rosmarini*, *L.* Olea Volatilia, *Juniperi communis*, Juniperi Sabinæ, Lavandulæ Spicæ, Lauri Sassafras, *Menthæ Piperitæ*, *Myrtæ Pimentæ*, *Pimpinellæ Anisi*, Rorismarini Officinalis. E. Olea *Juniperi*, *Pimento*, Corticis et Ligni Sassafras, *e Seminibus Anisi*, *Carui*, et *Fœniculi dulcis*, Florum Lavandulæ, Foliorum Sabinæ, *Herbæ florescentis Menthæ Piperitidis*, *Herbæ florescentis Menthæ Sativæ*, Origani, *Pulegii*, *Rorismarini*, *Rutæ*. D. Adulterations. *Fixed Oils* may be detected by moistening writing paper with the suspected article and holding it before the fire; if the oil be entirely essential, no stain of grease will remain; as castor oil is more soluble in spirit than the others, it is the one generally selected for this fraudulent purpose, and the addition of alcohol restores the sophisticated oil to its proper degree of consistency. *Alcohol* is discovered by adding water, which, if it be present, occasions a milkiness, and at the same time, an increase of temperature; a decrease of bulk also takes place, which may easily be ascertained by measuring the oil and water separately, and then transferring them, in a state of mixture, into a tube of small diameter. *Cheaper oils*, as that of turpentine, are recognised by their peculiar odour, which may be developed by rubbing a drop upon the hand and holding it to the fire, or, by the dense black smoke with which they burn. The oil of aniseed, as it crystallizes at 50°, is frequently sophisticated with wax, spermaceti, or camphor; the fraud is detected by warming the oil, when the crystals, if genuine, will dissolve.*

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[*] *Strychnia* was obtained from the beans of St. Ignatius by the following process: a portion of the beans being grated was heated in a close vessel, under pressure, with sulphuric æther, by which an oily matter was dissolved; the residuum then yielded by the action of alcohol, a yellowish brown, very bitter substance, which being boiled with pure magnesia and filtered, the colouring matter was washed out, and the *Strychnia* and magnesia, in a state of mixture, remained on the filtre. This strychnia was then separated by alcohol, and thus obtained in a state of great purity.

[†] *See note* under the article *Opium*.

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* Huiles Antiques.—The basis of the best of these oils, is the oil of Ben, from the nuts of the *Guilangia Moringa;* or oil of hazel, which is a very good substitute, since it is inodorous, colourless, and may be kept for a considerable period without becoming rancid: it is therefore well adapted to receive and retain the odour of those vegetables that yield but a small proportion of essential oil.

OLEA EXPRESSA. L.D.

Olea Fixa, sive Expressa. E.

Expressed or Fixed Oils.

These are obtained from animal matter by fusion, and from vegetable by expression, or decoction with water. **Qualities.** *Odour*, none; *Taste*, mild; they boil at 600°, but undergo decomposition, becoming acrid and empyreumatic; the oil, in this state, was formerly used in medicine under the name of *philosopher's oil.*[*] By exposure to air they absorb oxygen and become rancid; they congeal at a temperature of 32°, and some even above that. When the oil is expressed by beating the plates of the press, or by previously roasting the seeds, it is more disposed to become rancid; *cold drawn* oils are on this account to be preferred for the purposes of pharmacy. **Solubility.** They are insoluble in water, and, except castor oil, nearly so in alcohol and æther; with caustic alkalies they combine and form soaps; when aided by heat they readily unite with oxide of lead, forming the solid compound well known by the term *plaster.* They unite also very readily with each other, and with volatile oils. **Solvent Powers.** They dissolve sulphur, and form a kind of balsam with it; they also possess the power of extracting and dissolving the narcotic and acrid principles of several vegetable and animal substances, in consequence of which, the French pharmacopœia directs a series of preparations under the term "*Olea Medicata*;" thus there are olea Cicutæ, Hyoscyami, Solani, Stramonii, Nicotianæ;[†] which are made by digesting, with a gentle heat, one part of the subject in two parts of olive oil.[‡]

OLEUM AMYGDALARUM. L.E.D.

Oil of Almonds.

This fixed oil, whether procured from the *sweet* or *bitter* almond, has the same properties, for the bitter principle resides exclusively in combination with a peculiar volatile oil attached to the mucilage;* that from the latter keeps longer without rancidity. It is sometimes made from old Jordan almonds, *by heat*, in which case it very soon grows fœtid. Nut Oil, *Oleum nucum Coryli*, has been proposed as a substitute for that of almonds; in China it is drunk with tea, instead of cream. MEDICAL USES. For forming emulsions, in coughs, and other pulmonary complaints. FORMS OF EXHIBITION. It may be formed into an *emulsion* by the intermedium of *mucilage*, the *yelk of an egg*, or by that of an *alkali*.

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[*] **Oil of Bricks.**—So called because this empyreumatic oil was sometimes obtained by steeping hot brick in oil, and submitting it to distillation.

[†] **Roche's Embrocation for the Hooping Cough.**—Olive oil mixed with about half its quantity of the oils of cloves and amber.

Struve's Lotion for the Hooping Cough.—This once famous nostrum consisted of ʒj of *Tartarised Antimony*, dissolved in f℥ij of water, to which was added f℥j of *Tincture of Cantharides.*

[‡] The editors have also unaccountably retained the *Oleum de Lumbricis!*

1. BY MUCILAGE. This is in general a more convenient medium than the yelk of an egg; one part of gum, made into mucilage, will be sufficient for the diffusion of four parts of oil, (see *Mucilago Acaciæ*) the oil and mucilage must be carefully triturated together, and the water then gradually added; the emulsion thus formed is permanent, and the addition of a moderate quantity of acid, spirit, or tincture, will not produce decomposition. *See Form.* 73.

2. BY ALKALIES. This oil, by uniting with alkalies and water, forms an elegant and grateful mixture, for which purpose the following proportions are to be observed, every fʒj of oil requires ♏ viij of liquor potassæ, and fʒiss of distilled water. INCOMPATIBLE SUBSTANCES. *Acids; oxymel; syrups of poppies and squills; tartrate and super-tartrate of potass; super-sulphate of potass; oxy-muriate of mercury; resins; hard water. See Form.* 166, 167.

OLEUM AMYGDALÆ AMARÆ VOLATILE.

QUALITIES. *Colour*, pale yellow; *Odour*, fragrant and pungent, having the characteristic smell of prussic acid. *Taste*, pungent, bitter, and peculiar. SOLUBILITY. Like other essential oils, its sensible properties and medicinal effects are imparted to water; in alcohol it is very soluble.† CHEMICAL COMPOSITION. A peculiar volatile oil, combined with hydrocyanic acid. M. Vogel of Munich, has lately succeeded in separating these constituents, by agitating the whole in a concentrated solution of potass, and distilling to dryness; the oil volatilized together with water, while the residuum in the retort was found to contain *Cyanide of Potassium*. The volatile oil, thus purified, is without odour, and heavier than water. Its taste is extremely acrid and burning; by contact with air it crystallizes rapidly; it dissolves easily in alcohol and æther, but only in a very small proportion in water. The flame of its combustion is very brilliant, and accompanied with much smoke. In order to discover whether this oil, when freed from its hydro-cyanic acid is still poisonous, M. Vogel put a drop of it on the tongue of a sparrow; when it died, after violent convulsions, in a few seconds; he also poisoned a dog, two months old, with four drops of it; whence he concludes that the volatile oil, divested of its hydro-cyanic acid, is still a poison, although less energetic than the oil that has not undergone such a change. Medical Uses. It has all the characteristic effects of prussic acid, but is so powerful and dangerous as to preclude its application. It is principally sold to perfumers and confectioners.

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* If the plates of the press be heated, the fixed oil from the bitter almond will be odorous.

† ESSENCE OF BITTER ALMONDS.—The preparation sold under this name, for the purposes of perfumery, &c. consists of one part of this essential oil and seven parts of Rectified spirit.

It is generally obtained by distilling the expressed cake of bitter almonds; the operation however requires considerable pharmaceutical address, and is, moreover, attended with unpleasant consequences.*

OLEUM OLIVÆ. L.E.D. *Olive Oil.*

Qualities. *Colour*, pale yellow, somewhat inclining to green; *Taste*, bland; *Odour* none; it ought to congeal at 38° *Fah.* According to the recent observations of Dr. Clarke of Cambridge, this oil crystallizes in rectangular four-sided prisms with square bases. Adulterations. It is not unfrequently mixed with the oil of poppy seeds, (see *Papaveris Capsulæ,*) a fraud which may be easily discovered by exposing a sample to the freezing temperature, when the olive oil will congeal, while that of poppies will remain fluid; and since those oils which freeze with most difficulty are most susceptible of rancidity, the admixture of poppy oil must be regarded as injurious: it also deserves notice that the peculiar habitudes of *Oil of Olives*, with the *Per-nitrate of Mercury*, offer a distinguishing character, by which the adulteration of the oil may be satisfactorily detected; for if the *per-nitrate*, made by dissolving 6 parts of the metal in 7·5 of nitric acid, of sp. grav. 1·36, at a common temperature, be mixed with olive oil, the mixture, if kept cold, will in the course of a few hours become solid, whereas, if it has any admixture of the oil of grains, it will not undergo such a change. The contamination derived from lead, which is frequently immersed in the oil for the purpose of removing its rancidity, may be detected by shaking one part of the suspected sample with three parts of water, impregnated with sulphuretted hydrogen, in a stopped phial.

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* For such reasons there are but few wholesale houses who profess to distil it. I have, however, through the civility and attention of Mr. Johnson, chemist in Oxford-street, who frequently conducts the process on a large scale, had several opportunities of witnessing the interesting phenomena to which it gives rise. So powerful is the odour developed upon these occasions that it fills the premises with an almost insupportable atmosphere, occasioning headach, sickness, and *cough;* so that we may safely observe, that, whatever *miracles* the prussic acid may perform, when applied to the coats of the stomach, its application in the form of vapour to the lungs proves highly irritating to those organs.

The concentrated vapour of this essential oil is almost instantly destructive to animal life. I have seen flies drop lifeless to the floor as they have passed over the still; thus, as it were, realizing in miniature the fabled powers of Avernus.

> "Quam super haud ullæ poterant impune volantes
> Tendere iter pennis: talis sese halitus atris
> Faucibus effundens supera ad convexa ferebat."

Æn. VI. v. 239.

OLIBANUM. L.D.

Juniperus Lycia. *Gummi-Resina.*
Olibanum.*

Qualities. *Form*, fragments of a translucent whitish yellow, and generally powdered with a whitish dust, occasioned by the friction of the pieces against each other; *Odour*, when burning is fragrant; *Taste*, bitterish and acrid. Solubility. When triturated with water, a milky solution results, which after some time deposites the resinous part; and retains not more than three-eighths dissolved. Alcohol dissolves three-fourths of it, and forms a solution perfectly transparent. Chemical Composition. The latest analysis of this substance is by *Braconnot*, who found in 100 parts of it, of volatile oil 8, resin 56, gum 30, and of an anomalous principle resembling gum, but insoluble in water and alcohol, 5·2 parts. The oil, in colour and smell, very strongly resembled that of lemons. Med. Uses. It is now less used than formerly; it is, however, stimulant and diaphoretic. Pulverized, it enters into several popular electuaries for gleets, fluor albus, &c. and very probably acts by finding a passage into the urine, without undergoing any change or decomposition.

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* Some authors have considered the olibanum as the *Λιβανος* quasi *Oleum Libani*, (*Thus*) of the ancients, but *Dr. Maton* has observed that he cannot find any passage in the ancient authors sufficiently precise to corroborate this conjecture. See *Abietis Resina*.

OPIUM. L.E.D. (Papaver Somniferum.) *Capsularum immaturarum Succus concretus.* (Turcicus.) *Turkey Opium.**

Two kinds are found in commerce, distinguished by the name of *Turkey* and *East India* Opium.

Qualities. *Form.* Turkey opium occurs in flat pieces, of a solid compact texture, and possessing considerable tenacity; *Sp. gr.* 1·336, so that, when compared with the condensed juices of other plants, it is heavy, being exceeded only in this respect by opoponax and gum arabic. By long exposure to the air, it becomes hard, breaks with a glimmering fracture, owing to the presence of a few saline particles, and affords a yellowish powder. It is opaque, tenacious, plastic, adherent to the fingers. *Colour*, a reddish brown or fawn. *Odour*, peculiar, heavy, and narcotic. *Taste*, at first a nauseous bitter, which soon becomes acrid with some degree of warmth. It is inflammable, but yields no narcotic odour on burning. Solubility. It is partially soluble in water, alcohol, æther, wine, vinegar, and lemon juice; when triturated with hot water five parts in twelve are dissolved, six suspended, and one part remains perfectly insoluble, and resembles *gluten*. By long boiling its soporific powers are impaired, and ultimately destroyed: the alcoholic is more highly charged with its narcotic principle than the aqueous solution: but spirit rather below proof is its best menstruum. The watery solution when filtered is transparent, and reddens the colour of litmus; it undergoes no change on the addition of alcohol, but precipitates occur from *pure ammonia* and from the *carbonates of fixed alkalies;* from the solutions of *oxymuriate of mercury*, *nitrate of silver*, *subacetate and acetate of lead*, the *sulphates of copper*, *zinc*, *and iron*, and from an *infusion of galls*. Chemical Composition. Resin, gum, bitter extractive, sulphate of lime, gluten, *Narcotine* (*see note*) and a peculiar alkaline body, to which the soporific virtues of opium are owing, and to which the appropriate name of *Morphia* has been assigned; and it appears moreover that this new alkaline body exists in combination with an unknown acid, which has therefore been denominated the *Meconic acid;* so that the narcotic principle of opium is *Morphia* in the state of a *meconiate*, or perhaps of a *super-meconiate*.

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* The Greeks and Romans attached a very different meaning to the terms Opium and Meconium. The former signified the pure juice (οπος succus) that flowed from the scarified poppies; the latter, the juice obtained by bruising and pressing the poppy heads.

For these important facts we are indebted to the successive labours of Derosne,[*] Seguin,[†] Sertuerner,[‡] and Robiquet. And the French codex contains, in its appendix, formulæ for the preparation of morphia,[‖] according to the directions of

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[*] *Annales de Chimie, vol.* 45. *Derosne* first obtained a crystalline substance from Opium in the year 1803, which dissolved in acids, but he did not determine its nature or properties; in 1804 *Seguin*[†] (*Ann. de Chim. vol.* 92) discovered another crystalline body in opium, and although he described most of its properties, he never hinted at its alkaline nature. [‡]Sertuerner at Eimbeck, in Hanover, had at the same time as Derosne and Seguin, obtained these crystalline bodies, (*Ann. de Chim. et de Phys. T. v.*) but it was not until the year 1817, that he first unequivocally proclaimed the existence of a vegetable alkali, and assigned to it the narcotic powers which distinguish the operation of opium; to this body he gave the name of *Morphia*, and it appears to be the same as the essential salt noticed by Seguin. The salt of Derosne, now more usually denominated *Narcotine*, is quite a different principle, although it was constantly mistaken for one of the salts of *Morphia*, till *M. Robiquet* (*Ann. de Chim. & de Phys. T. v.*) pointed out its distinctive properties. It is an *azotised* substance, crystallizing in beautiful pearly prisms or tables; soluble in fixed oil, and still more so in æther and the acids; insoluble in water, and little soluble in alcohol; destitute of action on the vegetable colours, and incapable of neutralizing acids. There still exists, however, very considerable confusion with respect to this salt, and farther experiments are required to ascertain its chemical nature, as well as its physiological action.

[‖] The discovery of an alkaline body in opium induced the French and German chemists to examine the composition of other active vegetables, with a view to detect the existence of analogous principles; and their labours have been rewarded with unexampled success. They have accordingly obtained STRYCHNIA from the nut of the *Strychnos nux vomica*;—BRUCIA from the bark of the *Brucea Anti-dysenterica* (False Angustura Bark) VERATRIA from the *Veratrum album*, *V. Sabadilla* and *Colchicum Autumnale*;—CINCHONIA from the bark of the *Cinchona Oblongifolia* (*Red* Bark;)—QUINA (or Kina) from that of the *Cinchona Cordifolia* (*Yellow* Bark;)—EMETA from the *Callicocca Ipecacuanha*;—DELPHIA, from the *Delphinium Staphisagria*;—PICROTOXA from the *Menispermum Cocculus*;—SOLANA from the *Solanum nigrum*; and *S. Dulcamara*, GENTIA, from *Gentiana lutea*;—ATROPIA from the *Atropa Belladonna*;—HYOSCYAMA, from *Hyoscyamus Niger*. Besides which, *Capsicum*, *Piper nigrum*, and *Senna*, have been said to yield analogous principles of a salifiable character. With respect to most of these alkaline bodies farther experiments are required to establish our confidence; it is more than probable that several of them will turn out to be disguised modifications of each other; it has already been questioned whether QUINA and CINCHONIA be not varieties of one alkali; indeed it is possible that all these bodies may have the same alkaline base, and that they differ from each other in consequence of their combination with other principles, derived from the vegetable in question, and impressing upon the salt its characteristic virtues; and this idea receives material support from the fact, that they are neutralized by a very small proportion of acid. (*See a paper on this subject in the 70th number of the Edinburgh Med. and Surg. Journ.*)

They have all many properties in common, such as a degree of bitterness varying in intensity in different species; they are inodorous; are not altered by air or light, but are decomposed by a moderate heat; most of them enter into fusion, but at different temperatures, some for instance at below 212° Fah. others not until they are about to be decomposed; HYOSCYAMA will even resist a low red heat. They are very sparingly soluble in water, but they are in general rendered more so by the presence of resinous matter. They are these two latter chemists; viz. *Robiquet's* process. Three hundred parts of pure opium are to be macerated during five days, in one thousand parts of common water; to the filtered solution, fifteen parts of perfectly pure magnesia (carefully avoiding the *carbonate*,) are to be added; boil this mixture for ten minutes, and separate the sediment by a filter, washing it with cold water until the water passes off clear; after which treat it alternately with hot and cold alcohol, (12, 22, Bé.) as long as the menstruum takes up any colouring matter; the residue is then to be treated with boiling alcohol (22, 32, Bé.) for a few minutes. The solution, on cooling, will deposite crystals of *Morphia*.

Rationale of the Process. A soluble *Meconiate of Magnesia*

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nearly all highly soluble in alcohol. Æther readily dissolves DELPHIA, VERATRIA, EMETA, KINA, and GENTIA; but MORPHIA, CINCHONIA, and PICROTOXA, are very sparingly soluble: and STRYCHNIA and BRUCIA are nearly insoluble in it; they combine with the acids; and, in general, form neutral salts; but it appears that VERATRIA and EMETA always unite with an excess of acid. All the combinations with the mineral acids, excepting the salts of PICROTOXA, are exceedingly soluble in water; and, with the exception of NITRATE OF CINCHONIA, and all the salts of VERATRIA, they are crystallizable. The acetates too, with a few exceptions, are also soluble, and they are disposed to form *super*-salts. All the oxalates, except that of PICRATOXA, which is the most soluble of its salts, and all tartrates, are rather insoluble, and have likewise a tendency to unite with an excess of acid. The action of concentrated nitric acid on these alkaline bodies is very peculiar, converting the greater number of them into artificial tannin; but it appears to peroxidate MORPHIA, STRYCHNIA, and BRUCIA, rendering them less powerful as salifiable bases, and diminishing or destroying their action on the animal body. *See Edinburgh Med. & Surg. Journ. supra citat.*

By analysis, with the deutoxide of copper, these alkalies yield carbon, hydrogen, and oxygen; but no azote, unless they have been obtained by precipitation with ammonia, as in the process ef Sertuerner.

It would appear that these bodies exist in their native plants, in combination with peculiar acids; some of them are found in the state of *Malates*.

With respect to their physiological action it may be stated, that they would appear to concentrate in themselves the characteristic properties of the vegetables to which they belong, and yet, although their effects are much greater than those of the undecomposed vegetables, the same quantity of alkali is not so powerful in its pure form, as in its natural state of combination. Thus one grain of morphia produces no more effect than two grains of Turkey opium, which do not contain more than a sixteenth part of the alkali. To explain this loss of efficacy which usually attends our attempts at concentration, the reader is referred to the observations which have been already offered upon this subject in the first volume of this work, *pages* 188—207; and we cannot conclude this note without again declaring, that the experiments hitherto instituted to elucidate this subject are too few and unsatisfactory, to authorize a decided generalization. It may be said that the *Sulphate of Cinchonia* has already shown, by its effects, that it possesses all the powers of the bark; but let it be remembered, and with a feeling of humiliation, that after the experiments of Seguin, the same decision was formed respecting the virtues of *Glue!*

is formed, whilst the sediment consists of *Morphia* in the state of mixture, with the excess of magnesia; the boiling alcohol with which this residuum is treated, exerts no action upon the magnesia, but dissolves the *Morphia*, and on cooling surrenders it in a crystalline form. A repetition of the treatment with boiling alcohol will procure a fresh crop of crystals, and the process should be continued until they cease to appear.

Sertuerner's method. It differs from the preceding, in substituting ammonia for magnesia, and in adding to the sediment, separated as before mentioned, as much sulphuric acid as is sufficient to convert the *Morphia* into a sulphate, which is subsequently decomposed by a farther addition of ammonia; the precipitate thus produced is then dissolved in boiling alcohol, which on cooling surrenders the *Morphia* in a state of crystalline purity. It appears however that the *Morphia* produced by this latter method, is less abundant and more impure and coloured than that which is furnished by the process of Robiquet.

Characters of Morphia. When pure, it crystallizes in very fine, transparent, truncated pyramids, the bases of which are either squares or rectangles, occasionally united base to base, and thereby forming octohedra. It is sparingly soluble in boiling water, but dissolves abundantly in heated alcohol; and the solution is intensely bitter; in æther it is far less soluble. It has all the characters of an alkali; affecting test papers, tinged with turmeric or violets; uniting with acids, and forming neutral salts, and decomposing the compounds of acids with metallic oxides. It unites with sulphur by means of heat, but the combination is decomposed at the same instant; it is incapable of forming soap with an oxidized oil. It fuses at a moderate temperature, when it resembles melted sulphur, and like that substance crystallizes on cooling; it is decomposed by distillation, yielding carbonate of ammonia, oil, and a black resinous residue, with a peculiar smell; when heated in contact with air, it inflames rapidly; the voltaic pile exerts but little action upon it, yet when mixed with a globule of mercury, the latter appears to become increased in bulk, and to change consistence. When analyzed by means of the deutoxide of copper, it yields carbon, hydrogen, and oxygen; and if ammonia has been employed, as a precipitant in its preparation, we shall also obtain some nitrogen, but not if prepared according to the improved process of Robiquet. Its habitudes with different bodies have not hitherto been sufficiently investigated, but they are highly important, inasmuch as they will explain the operation of those various medicinal compounds, into which opium enters as a principal ingredient. *Sertuerner* has given us an account of the effect of the alcoholic solution of Morphia on himself and three of his pupils; he found, that repeated small doses of half a grain produced at first decided excitation, then weakness, numbness, and tendency to fainting; after swallowing vinegar while in this condition, violent vomiting was excited, profound sleep intervened in one delicate individual, and next day he suffered from nausea, vomiting, headach, anorexia, constipation, and heaviness, (*Ann. de Chim. et de Phys.* T. v.) This case is sufficient to show that although Morphia possesses the characteristic powers of opium, its strength is by no means commensurate with its supposed concentration. When uncombined it exerts little or no action in consequence of its insolubility. The following history of its saline compounds may be useful.

The *Carbonate* crystallizes in short prisms.

The *Acetate* in soft prisms, very soluble, and extremely active.

The *Sulphate*, in arborescent crystals, very soluble.

The *Muriate*, in plumose crystals, much less soluble; when evaporated, it concretes into a shining white plumose mass on cooling.

The *Nitrates*, in prisms grouped together.

The *Meconiate*, in oblique prisms, sparingly soluble.

The *Tartrate*, in prisms.

Morphia is separated from the above combinations by ammonia.

Morphia is very soluble in olive oil, and according to the experiments of M. Majendie, the compound acts with great intensity; with extractive matter, it forms a compound which is almost insoluble in water, but very soluble in acids.

The solubility of Morphia in acids explains why the administration of vinegar increases the powers of opium, (*see vol. i. p.* 167.) *M. Majendie* considers Morphia to produce a more purely soporose effect than opium, and that it is moreover exempt from the consecute operation which so generally renders opium objectionable. This opinion, however, has not been confirmed by the trials made in this country; equally gratuitous is the assertion of the same physiologist, that by ringing changes on the salts of Morphia, its hypnotic effects may be kept up without increasing its dose.

As *M. Majendie* considers the *after* effects of opium to be independent of Morphia, it was necessary for him to point out the particular principle from which these noxious consequences arose, and he accordingly ascribed them to the *Salt of Derosne*, now more usually denominated *Narcotine*, and which may be entirely removed from the extract of opium by macerating it in sulphuric æther; and in this way, it is said, a preparation is obtained which, like Morphia, is exempt from the occasional bad consequences of the common drug; but no satisfactory trials have yet been made with it.

The *Meconic acid*, when separated from the residuum of the magnesian salt, as described above, does not appear to possess any medicinal activity. Its distinguishing *chemical* character is, that it produces an intensely red colour in solutions of iron oxidized *ad maximum*.

East India Opium is an inferior species; it differs from *Turkey Opium* in its *texture* being less compact, and much softer; its *colour* darker; its narcotic *odour* fainter, but combined with a strong empyreuma, and in its *taste* being more bitter, but less acrimonious. According to the experiments of Mr. A. T. Thomson, *Turkey Opium* contains three times more morphia than the *East India* variety. This latter, when triturated with water, is taken up without any residuum; hence it contains no gluten, but the sulphate of lime is more abundant, as appears from the relative proportion of precipitate produced by oxalic acid. The solution of the acetate of barytes, whilst it occasions no disturbance in the solutions of the Turkey variety, produces a copious precipitate with the East Indian.

Med. Uses. Are so well known that a few practical remarks will suffice.*

Chemistry, it appears, has developed the principle of its activity, and accumulated experience has established the value and importance of its medicinal applications, but Physiology is still unable to demonstrate the manner in which it produces its effects. It must be admitted that its primary operation is that of a powerful and diffusible stimulant, but it is immediately followed by narcotic and sedative effects, which are far greater than could have been inferred from the degree of previous excitement, and hence much keen controversy has arisen in the schools concerning its *modus operandi*, (*see vol. i. p.* 103.) In large doses, the primary excitement is scarcely apparent, but the powers of life are instantly depressed, drowsiness and stupor succeed, and when the dose is excessive, these are followed by delirium, stertorous breathing, cold sweats, convulsions, and apoplectic death. Its stimulant effects are apparent only in small doses, by which the energy of the mind,* the strength of the pulse, and the heat of the body, are considerably increased, but all the secretions and excretions, except the cuticular† discharge, are diminished; for example, the fæces of persons, after the use of opium, are not unfrequently clay-coloured, from the suspension of the biliary secretion; this circumstance suggests some important precautions with respect to its exhibition. Opium, when properly directed, is capable of fulfilling two great indications; 1st, of supporting the powers of life, and 2d, of allaying spasm, pain, and irritation, and of blunting that morbid susceptibility of impression, which so frequently attends fever. Its use is contra-indicated in all cases where inflammatory action prevails, as in pulmonary affections attended with an accelerated circulation and a dry hard cough.‡ It is employed by some of the oriental nations for the same purposes that we take spirituous potations: by the Turks especially, to whom our more generous beverages are prohibited by religious prejudice, opium is solicited to inspire courage, or to invigorate fortitude;—to soothe sorrow, or to dissipate the remembrance of misfortune;—to awaken the fancy to more brilliant exertions, or to create that mild composure and serenity of feeling, which is so desirable after the cares and solicitudes of an active, perplexing, and arduous scene: like spirituous liquors among other people, it is in short the support of the coward,—the solace of the wretched,—and the daily source of intoxication to the debauchee. Notwithstanding all this, spirit and opium are by no means parallel medicines; on the contrary, the latter substance offers the best remedy for the *Mania a Potu*, and in cases of habitual drunkenness from alcohol, where our wish is to abstract the spirit, but are for obvious reasons unable so to do, we may frequently alternate its use with that of opium, with considerable advantage.

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* Forty thousand pounds weight of Opium, are annually imported into the port of London.

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* It has been stated in the Historical Introduction to this work, (vol. i. p. 24) that the *nepenthe*, which Helen mixed with wine, and gave to the guests of Menelaus, was probably opium; such was the opinion of *Sprengel*, expressed in his History of Botany. Other authors have entertained a different belief. *Delile*, in his "Flora Egyptiaca," considers it to have been a preparation of *hyoscyamus albus*. *Dr. Christen*, in his late elaborate Dissertation on Opium, agrees with *Forbes*, who states, in his Oriental Memoirs, that in Hindostan *Bendsch*, i. e. *nepenthe*, is prepared from the *cannabis sativa* of Linnæus. *Lindner* informs us that *bangue* is prepared from the dried leaves of the wild *cannabis*, the smoke of which is said to be more narcotic than even that of opium. There seems, however, to be good reason for supposing that Indian *bangue* is a compound of several ingredients. *Ray* says that he learned from *Sir Hans Sloane*, that the principal ingredient was not hemp, but a plant somewhat like it.

† The operation of Opium is not unfrequently attended with an itching, or sense of pricking of the skin, which is sometimes terminated by a species of miliary eruption.

‡ Opium is the Quack's sheet anchor. The various nostrums advertised as "*Cough Drops*, for the cure of colds, asthmas, catarrhs, &c." are preparations of Opium very similar to paregoric elixir. PECTORAL BALSAM OF LIQUORICE, and ESSENCE OF COLTSFOOT, are combinations of this kind. GRINDLE'S COUGH DROPS, are a preparation of the same description, only made with Rectified, instead of Proof Spirit, and consequently more highly charged with stimulant materials. "The mischief," observes Dr. Fothergill, "that has proceeded from the *healing* anodynes of quacks can be scarcely imagined; for in coughs, arising from suppressed perspiration, or an inflammatory diathesis, Opiates generally do harm."

SQUIRE'S ELIXIR. Opium, camphor, serpentaria, sub-carbonate of potass, anise and fennel seeds, made into a tincture, and coloured with cochineal.

FORD'S BALSAM OF HOREHOUND. This nostrum may very properly be classed under the present head. It consists of an aqueous infusion of horehound and liquorice root, with double the proportion of proof spirit or brandy; to which is then added, *opium*, camphor, benzoin, squills, oil of aniseed, and honey.

In combination, the medical powers of opium are wonderfully extended, so that there is scarcely a disease in which it may not, during some of its stages, be rendered useful. By diminishing the sensibility of the stomach and bowels, it becomes a valuable and efficacious *corrigent* to many important medicines, and thus frequently favours their absorption and introduction into the system, as, for instance, in the exhibition of mercurial alteratives, (*Form.* 141,) and in certain diuretic combinations, (*Form.* 100, 106, 107, 110,) in combination with antimonials, and with ipecacuan, its narcotic powers are obviated, and sudorific results are obtained. See *Pulv. Ipecac. co.* (*Form.* 117, 119, 124, 125, 127, 130.) FORMS OF EXHIBITION. In substance, or under the form of tincture. When we wish to continue the operation of opium, and not to obtain its full effects at once, it may be advantageously combined with some substance capable of retarding its solution in the stomach, as *gum resins*. See *Pilulæ* and *Form.* 10, 11, 12, 13. A watery infusion, made by infusing powdered opium in boiling water, will often operate without producing that distressing nausea and headach which so frequently follow the use of this substance. With respect, however, to the best modes of correcting the operation of this remedy, see vol. i. p. 195, and 196. Dr. Porter of Bristol has introduced to our notice a solution of opium in citric acid; his formula[*] for its preparation is subjoined, because I am of opinion that it merits the attention of the practitioner; I have lately submitted it to the test of experience, and it certainly possesses the merit of a powerful anodyne, operating with less disturbance than the more ordinary forms of this substance. I also take this opportunity of stating, that the *pyro-ligneous acid* manufactured by Beaufoy was used as a menstruum, and the effect of the solution was similar to that of Dr. Porter. When the stomach rejects altogether the internal exhibition of opium, it may be successfully applied along the spine, by friction, with the camphor liniment; a piece of solid opium introduced into the rectum, or dissolved in some appropriate solvent, and injected as an enema, affords also considerable relief in spasmodic affections of the bowels, and in painful diseases of the prostate gland, or bladder, (*Form.* 9.) INCOMPATIBLE SUBSTANCES. *Oxy-muriate of mercury; acetate of lead; alkalies; infusions of galls*, and *of yellow cinchona*. Orfila states that the decoction of *Coffee* is less energetic as an antidote, than the infusion. When we intend the opium to act as a sedative, we should not combine it with stimulants. The Edinburgh College certainly erred in this respect, when they made pepper an ingredient in their *Pilulæ Opiatæ*. In combination with vegetable acids, its narcotic powers are increased, in consequence of the formation of soluble salts with *morphia*.[*] When

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[*] LIQUOR MORPHII CITRATIS. ℞ Opii Crudi Optimi ℥iv; Acidi Citrici (Cryst:) ℥ij; semel in mortario lapideo contunde, dein aquæ distillatæ bullientis oj affunde; et intime misceantur; macera per horas viginti quatuor; per chartam bibulosam cola.

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[*] The BLACK DROP, or *The Lancaster*, or *Quaker's Black Drop*. This preparation, which has been long known and esteemed, as being more powerful in its operation, and less distressing in its effects, than any tincture of opium, has, until lately, been involved in much obscurity; the papers however of the late Edward Walton, of Sunderland, one of the near relations of the original proprietor, having fallen into the hands of Dr. Armstrong, that gentleman has obliged the profession by publishing the manner in which it is prepared, and is as follows:—"Take half a pound of opium sliced; three pints of good verjuice, (juice of the wild crab,) and one and a half ounce of nutmegs, and half an ounce of saffron. Boil them to a proper thickness, then add a quarter of a pound of sugar, and two spoonsful of yeast. Set the whole in a warm place near the fire, for six or eight weeks, then place it in the open air until it becomes a syrup; lastly, decant, filter, and bottle it up, adding a little sugar to each bottle." One drop of this preparation is considered equal to about three of the Tincture of Opium. P. L. It would appear that an *Acetate of Morphia* is formed, which is more active, and less distressing in its effects, than any other narcotic combination.

The *French Codex* contains directions for preparing a compound very similar to the *Black Drop;* viz.

VINUM OPIATUM FERMENTATIONE PARATUM, or *Guttæ, seu Laudanum Abbatis Rousseau*. Take of white honey, twelve ounces; warm water, three pounds; dissolve the honey in the water, pour it into a matrass, and set it aside in a warm place: as soon as fermentation has commenced, add four ounces of good opium, having previously dissolved, or rather diffused it in twelve ounces of water; allow them to ferment together for a month, then evaporate until ten ounces only remain, filter, and add four ounces and a half of alcohol.

LIQUOR OPII SEDATIVUS. Under this name, Mr. Battley, of Fore-street, London, has introduced a narcotic preparation, which it is generally supposed owes its efficacy to the *acetate of morphia;* on being kept, however, I found that it underwent some important change, during which so much air was disthe opium however has passed out of the primæ viæ, vinegar and acids are then the best remedies for counteracting its effects; (see *vol. i. page* 167.) **Dose**, must be varied, according to the intention of the prescriber, the constitution of the patient, and the nature of the disease. A quarter of a grain, frequently repeated, will keep up its exhilarating influence; (*Form.* 15) from gr. j to ij acts as a narcotic; its power on the system soon becomes weaker; and from habitual use it is so much impaired that very large doses are required to produce its usual effects. Russel observes that the effects of opium on those addicted to its use, are at first obstinate costiveness, succeeded by diarrhœa and flatulence, with loss of appetite and a sottish appearance; the teeth decay, the memory fails, and the unhappy sufferer prematurely sinks into the grave. **Officinal Prep.** Gr. j of opium is contained in *Confect. Opii.* L. grs. 36. *Elect. Opii.* E. grs. 43. *Elect. Catechu.* E. grs. 193. (℥.) *Elect. Catechu. comp.* D. grs. 199. (℥.) *Pil. Saponis cum opio.* L. grs. 5. *Pil. Opiat.* E. grs. 10. *Pil. e Styrace.* D. grs. 5. *Pulv. Corn. ust. cum Opio.* L. grs. 10. *Pulv. Cret. comp. cum Opio.* L. grs. 40. *Pulv. Ipecac. comp.* L.E. grs. 10. (℈.) *Pulv. Kino. comp.* L. grs. 20. (℥.) *Tinct. Opii.* L. ♏ 19. *Tinct. Camphor. comp.* L. f℥ss. *Tinct. Opii ammon.* E. fʒj. *Troch. Glycyrr. cum Opio.* E. ʒj. *Vinum Opii.* L. ♏ 17. **Adulterations.** The *Turkey Opium*, when good, is covered with leaves, and the reddish capsules of some species of *rumex;* the inferior kinds have none of these capsules

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engaged as to blow out the cork from the bottle with violence. This is an insuperable objection to its admission into practice.

In publishing the above statement, I have unfortunately been the cause of much unnecessary **Ink-shed**. A letter, by Mr. Battley, has been industriously circulated through the different ranks of the profession, purporting to be an apology for his preparation, but after a careful perusal of it, instead of being able to discover any argument in its favour, we receive a full acknowledgment of the validity of the objection above stated. "I explained to Dr. Paris, that the liability of the solution to undergo changes, **was a defect** in the preparation, but that the addition of a little spirit would prevent decomposition," and yet in the next sentence he tells us, that in those cases in which it is most beneficial, "the addition of spirit would be highly improper." See *Medical Repository, vol. xiii. p.* 273.

But the circumstance which has excited the greatest indignation in the mind of Mr. Battley, is my having applied the term **nostrum** to his preparation. Every medicine that is prepared by a secret process, and sold for the private advantage of an individual, is properly designated a **nostrum**. And I am at a loss to discover any feature in the present case that can entitle it to be considered as an exception to this general rule; but perhaps Mr. Battley is inclined to be hypercritical, and as the preparation is not indebted to him, but to Wedelius or Le Mort, for its origin, is prepared to exclaim with the Roman Poet:

"Quæ non fecimus ipsi vix ea **nostra voco**."

adhering to them. It is frequently adulterated with the extract of liquorice; it should be regarded as bad when it is very soft or friable, of an intensely black colour, or mixed with many impurities, when it has a sweetish taste, or marks paper with a brown continuous streak when drawn across it, or when it melts like wax, and makes a yellow solution in water. It frequently happens that in cutting a mass of opium, bullets and stones have been found imbedded in it, a fraud which is committed by the Turks, from which the retailer alone suffers. It is also adulterated with the extract of poppy capsules, or of the whole plant; with that of *chelidonium majus*, with gum arabic or tragacanth, with the oil of linseed, and even with the dung of oxen.

OVUM. L. (Phasianus Gallus. *Ovum.*) *The Egg of the Domestic Fowl.*

Vitellus. The *Yolk* or *Yelk*, is principally employed in pharmaceutical operations, for rendering oils and balsams miscible with water. It is gently laxative.

Oleum e vitellis, Oil of Eggs. Obtained by boiling the yelks, and then submitting them to pressure; fifty eggs yield about 5 oz. of oil. It is introduced into the Paris Pharmacopœia, being much employed on the continent for *killing* mercury.

Albumen. Used principally for clarifying turbid liquors.

Testa. Similar to other absorbents.

OXYMEL SIMPLEX. L.D. Mel Acetatum. P.L. 1787.

*Simple Oxymel.**

This composition of honey and acetic acid has been long valued on account of its detergent qualities, and has accordingly been much used as the basis of gargles, and expectorant remedies.

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* **Godbold's Vegetable Balsam.** In the specification of the Patent for this nostrum forty-two different vegetables are directed to be distilled "for the purpose of extracting their essences, which are to be preserved separately and apart from each other, in syrups, and are to be mixed with the following gums and drugs, viz. Gum Dragon, Gum Guaiacum, Gum Arabic, and Gum Canada, these being dissolved in double distilled vinegar, with a quantity of Storax dissolved in Spirits of Wine and Oil of Cinnamon. It is to be bottled off, and kept three years before it is fit to be administered for the Cure of Consumption, or Any Asthmatic Complaint." It is hardly necessary to observe, that no such directions ever are, or indeed ever could be followed; in short the "Balsam" is little else than simple oxymel. It is, however, not a little curious that among the forty-two plants enumerated, there should be several that would on distillation yield Prussic acid, such as the *Bays*. We wonder that this accidental circumstance has not been noticed, and turned to account, by some of those worthy disciples of Esculapius who live by the credulity of mankind, and, as Falstaff expresses it, "*Turn diseases to a commodity.*"

OXYMEL SCILLÆ. L.D. Oxymel Scilliticum.
P. L. 1720. 1745. *Oxymel of Squills.*

This preparation certainly possesses considerable powers as an expectorant; especially if allowed to pass slowly over the fauces, as when applied in the form of a linctus, (*Form:* 135,) which by stimulating the top of the trachea may possibly act, by a kind of "*contiguous sympathy*," upon the pulmonary structure,* and thereby increase the activity of the exhalant vessels, and so dilute the mucus contained in the follicles as to cause it to be poured out in a less viscid form, and consequently in a state to be more easily brought up by expectoration. Its action will also admit of another explanation, but for this see *vol.* 1. *p.* 133. Dose, from fʒss to fʒij. In larger doses it is given for the purpose of exciting vomiting, especially in hooping cough.

PAPAVERIS CAPSULÆ. L.E.D.
(Papaver Somniferum. *Capsulæ Maturæ.*)
Poppy Capsules, or *Poppy heads.*

These capsules are employed in medicine for the purpose of affording a decoction, to be applied as an anodyne fomentation, see *Decoctum Papaveris*, and a syrup of hypnotic qualities, see *Syrupus Papaveris.*

The seeds of the poppy capsules are not directly used for any medicinal purposes, but they yield a fixed oil which is daily met with in the market, and is frequently used to adulterate *Olive Oil*, which see. As an article of trade it is considered very inferior to the other fixed oils; it burns very badly, and yields a great quantity of smoke. To the pharmaceutic chemist it is an article of interest from the controversies to which it has given origin.†

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* It is in this manner, I apprehend, that stimulating syrups will frequently remove hoarseness.

† Although it has been long known that the seeds of the poppy, and the oil obtained from them by expression, do not possess any of the narcotic properties of the plant, and that they were even baked into cakes and used as an article of food by the ancients, yet has there been in later times very considerable contention respecting the propriety and safety of using such oil. The

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[PHYTOLACCA DECANDRA.

W. II. 828. *Bw. I.* 39. *Bn. II.* 213. *Radix.*

Poke-weed. Pigeon-berries. American Nightshade. The Root.

Specific Character. Leaves large, scattered, ovate, oblong, acute at both ends, entire, smooth; stems small, six or seven feet high, round, smooth, branched, when young, of a bright green colour, changing to purple after the berries ripen; flowers in long pedunculated racemes of a dull white colour, succeeded by long clusters of flattened and dark purple-coloured berries; root perennial, large, and fibrous. Grows in all parts of the United States, most commonly by the sides of roads and hedges. When it has grown to maturity, the whole plant possesses medicinal qualities, but the root is the most active part of it, and that which will now be most particularly noticed. Sensible Properties. *Odour*, none; *Taste*, sweetish; *Colour*, whitish, or ash-coloured; *Form*, large, fleshy, and spongy. I have seen it from eight to ten inches in diameter. Solubility. Alcohol, wine, and water, all extract some portion, but none of them the whole virtues of the root. Chemical Composition. The stalks of the plant contain a large proportion of caustic potash, and an acid, similar in its properties to the malic acid—(*Braconnot.*) The roots yield a variety of extractive matter; its medicinal qualities seem to reside in this latter principle—(*Bigelow.*)

cultivation of the Poppy for the sake of the oil of its seeds, as an article of food, has long been carried on in France, Brabant, and Germany; and more recently in Holland. At about the beginning of the 17th century, the opposition to this use of the Poppy manifested itself in France, and became so violent, that the Lieutenant-General of the Police of Paris ordered the medical faculty of that city to make the strictest examination concerning this point, and they accordingly reported that, as there is nothing narcotic or prejudicial to health in the oil, the use of it might be permitted. But this decision was unsatisfactory; and popular clamour determined the Court to pass a decree in 1718, prohibiting the sale of Poppy Oil, whether mixed or unmixed! The sale of the article, however, notwithstanding this most singular decree, was clandestinely encouraged, and it gradually increased until the year 1735, when the Court issued a severe decree, enjoining the superintendent to mix a certain quantity of the extract of Turpentine with every cask containing 1100 lbs. of this oil, of which no less than 2000 casks were consumed in Paris alone. But the secret demand for it increased until 1773, when a Society of Agriculture undertook to examine the question, and the result of their labours had the effect of reversing the prohibition, and of convincing the multitude that their fears were entirely unfounded, and that there was really no narcotic power, nor any secret mischief in the article.

Medical Use. The medicinal properties of the roots and leaves of the *Phytolacca* were carefully investigated, and the results of considerable experimental inquiry on the subject, published in 1817 by George Haywood, M. D. The observations by Dr. Bigelow, and others who have more recently used it, appear to confirm the following conclusions of Dr. H. which I extract from his paper. In speaking of the root, he says, "Ten grains sometimes produced vomiting, and fifteen usually operated both on the stomach and bowels, though I soon found that I could not calculate with any certainty upon the effects of any quantity less than a scruple, which was administered in every instance with perfect safety. From nearly thirty cases, in which I have used the powdered root in the dose of a scruple, I have been led to remark, that the quantity has always operated, excepting in one case, as an emetic and cathartic, usually three or four times thoroughly, though never severely; that in general it commences its operation on the stomach in an hour, and rarely continues longer than four. That it excites little or no nausea previous to its operation; and though it makes a powerful impression on the system, it never has produced any disagreeable or unusual symptoms. I have never noticed any dizziness, vertigo, or stupor from it, and I have always been particular in my inquiries to ascertain if any such effects took place. I afterward gave it in the dose of half a drachm, and found that it operated in every instance longer and more powerfully than a scruple "* Dr. H. found that though the leaves possessed in some measure the properties of the root, it was in a much feebler degree; that both operated more powerfully on the stomach than on the bowels; he seldom if ever witnessed any narcotic effects from either of them, in his own practice. He employed the roots and leaves, in powder, in alcoholic and vinous tincture, and in decoction, and was satisfied that the powdered roots in substance acted most promptly. Applied externally, the Phytolacca has been found serviceable in removing psora and other cutaneous diseases. For this purpose it may be used in the form of decoction, or it may be made into an ointment, by mixing ʒij of the powdered root with ℥j of lard.—I.]

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* New-England Journal of Medicine and Surgery, Vol. VI. p. 313.

PILULÆ. L.E.D. *Pills.*

For general instructions respecting the formation and administration of pills, the practitioner must refer to the *first volume* of this work, *page* 232.

OFFICINAL PILLS.

PILULÆ ALOES COMPOSITÆ. L. Extract of Aloes, *two parts*, extract of gentian, (𝕲) *one part*, with oil of carraway; (𝕰) to which syrup is unnecessarily added. It is a useful pill in habitual costiveness. *Dose*, grs. x to ℈j.

PILULÆ ALOES ET ASSAFŒTIDÆ. E. Powdered aloes, assafœtida (𝕲) and soap, (𝕷) *equal parts*. Anodyne and cathartic; a very useful combination in dyspepsia attended with flatulence. *Dose*, grs. x.

PILULÆ ALOES CUM MYRRHA. L. *Pilulæ Rufi*. P.L. 1745. Extract of aloë, *two parts*, saffron and Myrrh, (*e*) *one part*, syrup, q. s. This is a very ancient form of preparation, and is described by Rhazes. It is stimulant and cathartic. (*Form.* 11, 81, 98, 99.) *Dose*, grs. x to ℈j.*

PILULÆ ALOES CUM COLOCYNTHIDE. E. This pill is known by the popular name of *Pil. Cocciæ*. Κοκκὶον signifies a seed, and the term was first applied to this preparation by Rhazes. It consists of *eight parts* of aloes and scammony; *four* of colocynth; and *one part* of oil of cloves, (𝕰) and of sulphate of potass with sulphur, olim *Sal Polycrest*. It is more powerful in its operation than the simple aloetic pills.

PILULÆ CAMBOGIÆ COMPOSITÆ. L. Gamboge, extract of aloe, and compound powder of cinnamon *one part*, soap *two parts;* see vol. i. p. 209, and *Form.* 88.

PILULÆ FERRI COMPOSITÆ. L. This combination is analogous to that of Griffith's mixture. *Dose*, gr. x to ℈j. *Form.* 99. They become extremely hard by keeping.

PILULÆ GALBANI COMPOSITÆ. L. *Pil. Gummosæ. P. L.* 1745. We are here presented with a combination of fœtid gums, in which assafœtida is the most potent article. Antispasmodic and emmenagogue. *Dose*, grs. x to ℈j. See *Form.* 10, 27, 98.

PILULÆ HYDRARGYRI. L.E.D. *Pil. Mercuriales.* P.L. 1745. vulgo, The *Blue Pill*. The mercury in this preparation is not, as it was formerly considered, in a state of mere mechanical division, but in that of a black oxide, upon which its activity as a remedy undoubtedly depends; for mercury in its metallic state is entirely inert with regard to the living system. Various substances have at different times been triturated with the mercury, for the purpose of *extinguishing* or *killing* it, by effecting the mechanical division, and subsequent oxidation of its particles, as manna, melasses, &c. *Conserve of Roses* is now generally preferred for this purpose, although Swediaur suspects that the astringent principle of this conserve invalidates the effects of the mercury. "I have," says he, "given these pills to several patients for a long time, without any symptom of salivation." Mr. Abernethy observes in his surgical works, that the *Pilulæ Hydrargyri* are uncertain in their effects; and that some of the students at the hospital on examining them, and different parcels of the conserve of roses, say that the sulphuric acid may be discovered in each. Nor is it improbable that in making the conserve for sale, some of this acid may be added to brighten the colour; and if so, the mercurial pill which is made from it may contain, in varying proportions, some of that highly deleterious compound, the *subsulphate of mercury*. When any of the gums are employed for *killing* the metal, the pills soon become hard and brittle, and after some time the mercury is liable to run into its metallic state. The pill-mass, when rendered thinner by the addition of a little water, and extended on a piece of paper, ought not to exhibit any metallic globules; in this examination, however, we must be careful not to be betrayed by the fallacious appearance which is frequently presented by small crystals of saccharine matter. The relative proportion of mercury contained in the mass can be ascertained only by its weight. The *blue pill* is made at Apothecaries' Hall by a very ingenious machine actuated by steam, and which rubs as well as rolls the materials, and it is said that the pill thus made is more active than that produced in the ordinary way. MED. USES. It is by far the best form for the internal exhibition of mercury; where it is intended to act upon the system as an alterative, it should be administered in doses of from grs. iv to vj; if it occasion any action on the bowels, it may be conjoined with opium; sometimes a few grains of rhubarb, exhibited every morning, will impart such a tone to the intestines, as to enable them to resist the mercurial irritation. In cases where the form of pill is objectionable, it may be readily suspended by the aid of mucilage in some aqueous vehicle; when exhibited in doses of grs. x to ℈j, it acts as a mild but efficient purgative. *Form.* 79, 106. One grain of mercury is contained in *four* grains of the mass, made according to the London and Dublin formulæ, and in three grains according to that of Edinburgh. For the specific effects of mercury, see *Ung. Hydrarg.*

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* As these pills are liable to become hard and insoluble by being kept, it is better to keep the ingredients in powder, and to form them extemporaneously with a little syrup.

Pilulæ Hydrargyri Sub-muriatis Compositæ. L.E. Olim *Plummer's Pills.* They consist of *one part* of calomel and precipitated sulphuret of antimony, (𝕭) and *two parts* of guaiac (𝕮) made into form with mucilage. It is a very useful alterative, especially in cutaneous eruptions, and in secondary syphilitic symptoms, particularly when affecting the skin. *Dose*, grs. v to x.

Pilulæ Opiatæ. E. Opium *one part;* extract of liquorice *seven parts;* Jamaica pepper *two parts.* It is, however, a compound of questionable propriety.

Pilulæ Rhei Compositæ. E. Rhubarb, aloes, and myrrh, with oil of peppermint. When such a combination is indicated, it is better to prescribe it extemporaneously; for the mass, by being kept, will become less efficacious.

Pilulæ Saponis cum Opio. L. *Pil. Opii.* P.L. 1787. By substituting soap for extract of liquorice, these pills are now rendered more soluble in the stomach, and are consequently more efficient. Five grains contain one of opium.

Pilulæ Scillæ Compositæ. L. A stimulating expectorant; but as squill is always impaired by keeping, it ought to be considered as an extemporaneous combination. It is surely injudicious thus to multiply our officinal formulæ. *Form.* 104.

PIMENTÆ BACCÆ. L.E. (Myrtus Pimenta.
Pimento. D. *Baccæ.*)

Pimenta Berries. Jamaica Pepper. Allspice.

Qualities. *Odour*, aromatic and agreeable, combining that of cinnamon, cloves, and nutmegs; hence the term *allspice.* *Taste*, warm and pungent, resembling that of cloves. These qualities reside principally in the cortical part of the berry. Chemical Composition. It contains a volatile oil, very like that of cloves, resin, extractive, tannin, and gallic acid. Solubility. Water, alcohol, and æther extract its virtues. Medical Uses. Principally to cover the disagreeable taste of other remedies; it is also a very useful adjunct to dyspeptic medicines.* Officinal Prep. *Aq. Piment.*

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* Ward's Paste for fistula, piles, &c.—The following is the receipt for preparing this composition. Take of Black Pepper and Elecampane, powdered, equal parts lbss, of the seeds of Fennel lbiss, of Honey and Sugar, equal parts, lbj; beat, and well mix together all the ingredients, in a mortar. *Dose*,

L.E.D. *Ol. Piment.* L.E.D. *Pil. Opiat.* E. *Syrup. Rhamni.* (𝔈) L.

PIPERIS LONGI BACCÆ. L.E.D.

Long Pepper.

The chemical and medicinal properties of this substance are similar to those of black pepper; *which see.* The varieties in the market are distinguished by the names *short* long pepper, and *long* long pepper. The native practitioners of India prescribe it in infusion, mixed with a little honey, as a remedy in catarrhal affections, when the chest is loaded with phlegm.

PIPERIS NIGRI BACCÆ. L.E.D.

Black Pepper.

Chemical Composition. An oily matter, fecula, and extractive; the acrid principle of Pepper has been separated by Oersted in an alkaline form. The following is the process by which it was procured. The pepper having been digested in alcohol, muriatic acid, and afterward water were added to the tincture, by which the resin was precipitated, while a *muriate of Pipera* remained in solution. The solution was then, after having been submitted to a certain evaporation, decomposed by pure potass, when a precipitation of *Pipera* took place. This salifiable base is nearly insoluble in cold, and only very slightly soluble in boiling water. It dissolves in alcohol, and the solution has a greenish-yellow colour, which by the addition of nitric acid is rendered green. The capacity of the base for saturation appears very small. Solubility. The virtues of pepper are entirely extracted by æther and alcohol; and partially by water, 550 pints being required to extract all the sapidity of ℔j of pepper. Medical Uses. It appears to be a more general and permanent stimulus than other species

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the size of a nutmeg three times a day. With respect to the value of this remedy it may be observed that it is principally useful in those cases attended with considerable debility, in leucophlegmatic habits, and when piles arise from a deficient secretion in the rectum. On the other hand, the composition will as certainly prove injurious in those cases which are accompanied with erysipelatous inflammation, and which require cooling laxatives, and a total abstinence from all stimulants, for their cure.

Ward was originally a footman, and during his attendance upon his master on the Continent, obtained from the Monks those receipts, which he afterward vended as *Nostrums*.

of equal pungency on the palate; it may be combined with bitters, and exhibited in nausea, dyspepsia, retrocedent gout, or as a stimulant in paralysis; it is also a valuable coadjutor to bark, in obstinate intermittents. An infusion made with black pepper that has been toasted, the natives of India often prescribe in cases of cholera morbus; and I have known it, says Dr. Ainslie, put a stop to the vomiting when many other remedies had failed. Dose, grs. v to ℈j, or more. Officinal Preparations. *Emplast. Meloes vesicat. comp.* E. *Unguent. piper. nig.* D. *White* pepper is made by separating the first skin of the berry, by soaking it in salt and water. Adulterations. The powdered husk of the mustard seed is universally mixed with powdered pepper, and is regularly sold for this purpose by the mustard manufacturer, under the technical title of P. D. (*Pepper Dust*) there are besides other admixtures less innocent. *Whole Pepper* is also frequently factitious; artificial pepper-corns, composed of peas-meal, both white and black, are mixed with real pepper-corns, and sold as genuine pepper; the method of detecting the fraud is very simple; throw a suspected sample into water; those that are artificial will fall to powder, or be partially dissolved, while the true pepper-corns will remain whole.

PIX ARIDA. L. (Pinus Abies. *Resina Concreta.*)
Pix Burgundica. E. D. *Burgundy Pitch.*

This substance is procured by making incisions through the bark of the Norway Spruce Fir, and afterward boiling the flakes so obtained in water, and then straining the resin through coarse cloths under a press; whereas *frankincense* (Abietis resina) is a spontaneous exudation from it. It is now entirely confined to external use, as a rubefacient spread on leather; it is very adhesive. *Emplast. Picis comp.* L. *Emplast. Picis Burgund.* D. Adulterations. A factitious sort, manufactured in England, is often met with; it is to be distinguished by its friability, and its want of viscidity and unctuosity, and by the absence of that peculiar odour which characterizes the genuine specimens.

PIX LIQUIDA. L.E.D. (Pinus Sylvestris.) *Tar.*

This fluid is formed from the decomposition of the resinous juice of the pine, during the slow and smothered combustion of its branches, and as a summary definition of the substance, that by Pliny cannot be surpassed, "*Pix nihil aliud est quam combustæ resinæ fluxus.*" *Lib.* 23. *c.* 1. **Chemical Composition.** It is found to consist of empyreumatic oil, resin acetic acid, and some salts. **Solubility.** Water readily dissolves a portion of Tar, and forms a solution of the colour of Madeira wine, with a sharp empyreumatic taste. **Med. Uses.** Tar water, under the auspices of Bishop Berkley, was formerly considered a remedy of extraordinary powers;* this opinion, however, has at length passed away, (*see vol.* 1. *p.* 46,) and Tar is now particularly indebted for a place in the Materia Medica, to an essay by Sir Alexander Crichton, entitled, "*An Account of some Experiments made with the Vapour of boiling Tar*,† *in the cure of Pulmonary Consumption.*" During Sir Alexander's late visit to this country, I was induced by him to make a trial of its effects, and I do not feel any hesitation in stating that the result has led me to believe that it may, in some cases, be attended with benefit. In the application of the remedy several precautions are necessary for its success. The Tar employed should be that used in the cordage of ships, to every pound of which half an ounce of subcarbonate of potass must be added, in order to neutralize the pyroligneous acid generally found mixed with the tar, the presence of which will necessarily excite coughing; the tar thus prepared is to be placed in a suitable vessel over a lamp, and to be kept *slowly* boiling in the chamber during the night as well as the day; the vessel, however, ought to be cleaned and replenished every twenty-four hours, otherwise the residuum may be burnt and decomposed, a circumstance which will occasion increased cough and oppression on the chest. The ancients entertained a high opinion of the efficacy of Tar in pulmonary diseases, when internally administered, supposing it to promote expectoration, relieve dyspnæa, and check spitting of blood; Dioscorides particularly speaks of its utility in such cases; he also recommends it to be applied to ulcers, which he says it fills up and heals, whether they be situated on the surface of the body, or in the ears, throat, and other internal parts. See also Pliny, lib: 24, c. 7; and *Acid: Acetic: e ligno stillat:* in the present work, p. 25. OFFICINAL PREP. *Unguent. Picis Liquidæ.* L.

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* Tar water was also at one period celebrated as an antisiphylitic remedy. M. Acharius, in his work "*On the Use and Advantages of Tar Water in Venereal Complaints*," enumerates the cases of a number of patients cured by this remedy alone in the Hospital of Stockholm, without any Mercury.

† Dr. Mudge in the year 1782 had recommended the fumigation of balsams, in a pamphlet on the subject of his Inhaler; little or no notice was taken of this recommendation, a circumstance which cannot excite our surprise when we consider the extravagant terms in which the pretensions of the remedy were supported. "I believe," says he, "that much of the benefit which consumptive persons experience from sea voyages, is derived from the tar vapour constantly present on board a ship!"

A Radical and Expeditious Cure for a recent Catarrhous Cough. *By* J. Mudge, *Plymouth*, 1783.

PLUMBI SUB-CARBONAS. L.

CARBONAS PLUMBI, vulgo *Cerussa.* E.
CERUSSA, *Sub-acetàs Plumbi.* D.
Cerusse, or *White Lead.*

CHEMICAL COMPOSITION. The composition of this substance has not until lately been well understood, and hence the different appellations bestowed upon it by the different colleges. SOLUBILITY. It is insoluble in water, but soluble in pure potass. USES. It is only employed externally, by sprinkling on excoriated parts; the safety of such a practice however is questionable. OFFICINAL PREP. *Unguent. Ceruss.* D. *Plumbi Super-acetas* (𝕲.) L.E.D. ADULTERATIONS. *Chalk* may be detected by assaying its solution in cold acetic acid with oxalate of ammonia; *Carbonate of barytes*, by adding to a portion of the same solution, sulphate of soda very largely diluted with distilled water: and *Sulphate of barytes* or *Sulphate of lead*, by the insolubility of the white lead in boiling distilled vinegar.

PLUMBI OXYDUM SEMI-VITREUM. L.E.

LITHARGYRUM. D. *Litharge.*

It is a yellow protoxide of lead, which has been melted and left to crystallize by cooling. It is only employed in pharmacy for forming other preparations of lead, and the following officinal plasters, *Emplast. Plumbi.* L.E.D. *Ceratum Saponis.* L. It is added to wines to remove their acidity; for the detection of which, evaporate the suspected liquor to a thick fluid, add charcoal, and calcine in a crucible: in the space of an hour metallic points will be obtained, consisting of lead surrounded by a quantity of yellow protoxide.

PLUMBI SUPER-ACETAS. L.

Cerussa Acetata. P.L. 1787. *Saccharum Saturni.* 1745.
ACETAS PLUMBI. E. Acetas Plumbi. D.
vulgo, Sugar of Lead.

QUALITIES. *Form*, irregular masses resembling lumps of sugar, being an aggregation of acicular four-sided prisms terminated by dihedral summits, which are slightly efflorescent; by careful crystallization it may be obtained in quadrangular prisms. *Taste*, sweet and astringent. CHEM. COMPOSITION. Although termed a *Super*-acetate, it appears to be a neutral salt, and that its power of reddening vegetable blues is attributable to a partial decomposition; for when dissolved in water containing the least portion of carbonic acid, a white carbonate of lead is precipitated, and a corresponding portion of acetic acid is necessarily disengaged. According to the experiments of Berzelius, this salt, in its anhydrous state, consists of one proportional of acetic acid, and one proportional of oxide of lead; so that the proportion of the metallic base is one-third of that in the *sub*-acetate. SOLUBILITY. It is dissolved in 25 parts of water, hot or cold; it is also soluble in alcohol. When common water is employed the solution is quite turbid, unless a small proportion of acetic acid be previously added. INCOMPATIBLE SUBSTANCES. *The alkalies, alkaline earths and their carbonates; most of the acids; alum; borax; the sulphates, and muriates; soaps; all sulphurets; ammoniated, and tartarized iron; tartarized antimony; undistilled water.* The solution of *acetate of ammonia* decomposes that of this salt, in consequence of the carbonic acid which is generally diffused through it. Certain bodies appear likewise to be incompatible with the compounds of lead, not from the *chemical* changes they induce, but from the contrary effects they produce upon the body; thus mercury appears to invalidate their powers, and to counteract their effects, as we may have observed in treating saturnine cholic. I suspect also that antimony operates in the same manner; M. Merat relates a case of an apothecary who was cured of a desperate saturnine cholic, after having taken, in the course of eight days, eighty grains of tartarized antimony. MED. USES. I feel no hesitation in pronouncing this salt of lead to be one of the most valuable resources of physic; from the results of numerous cases, I state with confidence that it is more efficient in stopping pulmonary and uterine hæmorrhage, than any other known remedy, and that its application is equally safe and manageable; but it must not be combined with substances capable of decomposing it, nor must it be simultaneously administered with the medicines which are frequently prescribed in conjunction with it, as an *Infusion of Roses* with *Sulphate of Magnesia, &c.* Alum has also been in some cases added to it, with the intention of increasing its astringency. It is evident that under such circumstances an insoluble and inert *Sulphate of Lead* will be produced. The experiments of Orfila confirm the truth of these views, and show that such substances act as counter-poisons for the salts of lead. According to my experience, those vegetable acids which decompose the acetate of lead, and form insoluble salts with its base, are not *medically* incompatible, when administered simultaneously with it, although no scientific physician would prescribe such a mixture; this fact is shown by the circumstance of potations, containing malic and tartaric acids, not having been found to invalidate the efficacy of this salt. Whether the stomach in the first instance prevents the decomposition, and its necessary results, or allows the operation of the usual affinities, and then subsequently decomposes the insoluble compound which results from them, by the abstraction and *digestion* of its vegetable constituent, are questions for future inquiry, when the laws of gastric chemistry shall be better understood, and more justly appreciated. I have also seen much benefit accrue from this medicine in protracted diarrhœa, when it has checked the bowels more effectually even than opium. M. Gaspard has communicated to the public, through the medium of Majendie's *Journal de Physiologie*, (3 numéro Juillet, 1821,) a paper upon the operation of *Acetate of Lead*, entitled "*Experiences Physiologiques et Medicales sur L'Acetate de Plomb*," in which he asserts that this metallic salt cannot be administered without risk in any dose, unless indeed it be given in vehicles which decompose it, and which, he adds, appears generally to have happened in the prescriptions of those who have given it extensively. He observes, that "it produces a slow and peculiar inflammation of the bowels, as well as of the lungs; and that it, moreover, occasions *Cholica Pictonum*." No one, I apprehend, will deny the poisonous quality of acetate of lead, any more than that of arsenic; and yet both may, by proper management, be rendered therapeutical agents of value and safety. FORMS OF EXHIBITION. In that of pill, guarded by opium; it will be prudent to recommend an abstinence from all potation, except that of cold water, or draughts composed of diluted acetic acid, for at least an hour after the ingestion of the pill. DOSE, gr. ¼ to gr. j. *Form.* 57. OFFICINAL PREP. *Cerat. Plumb. superacetat.* L.*

[PODOPHYLLUM PELTATUM.

W. II. 1141. *Bw. II.* 34. *Bn. II.* 9. *Radix.*

May Apple. Mandrake. The Root.

SPECIFIC CHARACTER. Stem terminated with two peltate palmate leaves: flower single, inserted in the fork, formed by the petioles of the leaves, sometimes the plant is three-leaved, and sometimes the flower is inserted on the side of one of the petioles. An indigenous plant, growing in moist soils in open woods and meadows. It blooms in May and June. The fruit, which is esculent, is of the size of a common plum. The leaves are narcotic and poisonous. SENSIBLE PROPERTIES. The root is tortuous, pointed; *texture*, when dry, hard and brittle; *colour*, brown, approaching to black externally, whitish within; *taste*, bitter and disagreeable. CHEMICAL COMPOSITION. Resin, gum, gum-resin, galic acid, and extractive. SOLUBILITY. Proof spirit and water extract its virtues. The watery extract is mildest in its operation, gr. xv. being about equal to gr. x. of the gum-resin. MEDICAL USE. This is the American Jalap, being a sure and excellent cathartic. It does not operate so speedily as Jalap, but in no other respect is it inferior to it. It as seldom disagrees with the stomach; it is equal if not superior to it in strength; it is less unpleasant to the taste; it rarely causes pain or griping, and its operation is uniform and effectual. An ordinary dose requires from six to ten hours to operate, but its action is quickened by combining calomel with it. PREPARATIONS and DOSES. The pulverized root, gr. x to ℈j.; the watery extract, gr. 15; spt. extract, gr. x. It is important that the root should be gathered in the fall of the year.—I.]

POTASSA CUM CALCE. L.E.

KALI CAUSTICUM CUM CALCE. D.

The addition of lime to potass renders it less deliquescent, and more manageable as an escharotic.

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* ROYAL PREVENTIVE.—This pretended prophylactic against venereal virus is a solution of *Super-acetate of Lead.*

POTASSA FUSA. L.

Potassa. E. Kali Causticum. D.

Lapis infernalis. P.L. 1720.

Qualities. *Form*, a white brittle substance, extremely caustic and deliquescent, and possessing in an eminent degree all the properties denominated *alkaline*. Solubility, f℥j of water dissolves ʒvij; it is also soluble in alcohol. Chemical Composition. This preparation, independent of its impurities, is the *hydrated protoxide of potassium*, although in the state, in which it is cast into sticks, it generally contains a little *Peroxide*,* and therefore evolves oxygen when dissolved in water. Medical Uses. It is a most powerful caustic (*causticum commune acerrimum*,) and is frequently employed to establish an ulcer; or, instead of incision, to open a tumour. It has the advantage of other caustics, from the circumstance of our being able to neutralize its powers, by touching it with vinegar, and thus to arrest its progress in an instant; it is however more liable to produce a large eschar than nitrate of silver, in consequence of the chemical action of the alkali upon the skin. Within the last few years, surgeons have greatly preferred the use of this caustic to that of *nitrate of silver*, in cases of organic stricture of the urethra, as acting more powerfully, and yet occasioning less irritation than the latter substance; it is also said that the part which it destroys is sooner detached and more easily eliminated. Its disposition, however, to extend its sphere of action has occasioned such a destruction of the membrane as to allow the urine to pass into the cellular substance, by which very serious effects have been produced. For this reason there are cases in which the *nitrate of silver* is still to be preferred. As an internal remedy it is only employed in solution. See *Liquor Potassæ*.†

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* Peroxide of Potassium is produced by heating the metal in a considerable excess of oxygen. It is an orange-coloured body, which, upon being put into water effervesces, and gives off oxygen, and is thus reduced to the state of protoxide.

† *Potass* forms the basis of many of those preparations, sold as Depilatories; in some instances combined with Lime; Colley's Depilatory appears to consists of Quick-lime, and a portion of *Sulphuret of Potass*.

POTASSÆ ACETAS. L. ACETAS POTASSÆ. E.

ACETAS KALI. D. *Kali Acetatum.* P.L. 1787.—*Sal diureticus.* P.L. 1745.—*Terra foliata Tartari—Sal Sennerti—Magisterium Purgans Tartari—Sal essentiale vini. Oleum Tartari Sennerti—Sal digestivus Sylvii, &c.*

QUALITIES. *Form*, masses of a foliated, laminar texture, extremely deliquescent; *Odour*, slight and peculiar; *Taste*, sharp and pungent. SOLUBILITY. f℥j of distilled water at 60° dissolves 404 grains, or 100 parts of it are soluble in 105 parts of water; the solution soon undergoes spontaneous decomposition; it is soluble in four times its weight of alcohol. CHEMICAL COMPOSITION. It consists of one proportional of each of its components, or 45 potass and 48 acetic acid. INCOMPATIBLE SUBSTANCES. It is decomposed by *tamarinds*, and *most sub-acid fruits*; by almost every acid, as well as every variety of neutral salt, whether *alkaline*, *acid*, or *metallic*. MED. USES. In small doses, diuretic; in larger ones, mildly cathartic. DOSE, ℈j to ʒj to produce the former, ʒij to ʒiij to excite the latter of these effects. FORMS OF EXHIBITION. It is not admissible in powders or pills, but should be always exhibited in solution. (*Form.* 108, 110, 111.) In the former editions of this work, I introduced under the present article, those views regarding the operation of saline bodies upon the kidneys, and their decomposition by the digestive organs, which I considered as being capable of throwing some light upon the medicinal operation of these bodies. Having, however, in the present edition of my work devoted a chapter to the consideration of Diuretics, I have necessarily removed all my general observations upon this subject to that part of the work; I therefore entreat the reader to refer to the first volume, page 124.

ADULTERATIONS. *Tartrate of potass* is discovered by adding a solution of tartaric acid, which will occasion with it a copious precipitate; the *sulphates*, by their forming with acetate of lead, or muriate of baryta, precipitates insoluble in acetic or muriatic acid. The brown tinge which it frequently exhibits depends upon the same cause as that which usually imparts colour to the *Liquor. Ammon. Acet.* This salt is also sometimes contaminated with *lead*, which arises from its having been prepared by decomposing the *acetate of lead* by means of *carbonate of potass*.

POTASSÆ CARBONAS. L.E.

Carbonate of Potass.

Qualities. *Form*, crystals which are four-sided prisms with dihedral summits, permanent in the air; *Taste*, slightly alkaline without acrimony. Chemical Composition. It is a *bi-carbonate*, consisting of two proportionals of carbonic acid and one proportional of potass; and in its crystalline form, it also contains water equal to one proportional. Solubility. It is soluble in 4 parts of cold, and in 5-6ths of its weight of boiling water, in which it is partially decomposed, carbonic acid being emitted during the solution; it is quite insoluble in alcohol. Medical Uses. In cases where an alkali is indicated, this preparation offers an agreeable and efficient remedy; and experience has shown that its additional proportion of carbonic acid does not in the least invalidate its alkaline agency. In disordered states of the digestive functions, alkalies frequently act with surprising effect; in calculous affections their value has been already noticed (see *Liquor Potassæ*,) and the stomach appears to bear the protracted exhibition of the carbonate of potass or soda, with more temper than it does that of any other alkaline combination; and on account of the increased quantity of carbonic acid which this salt contains, it is preferable for effervescing draughts. (See *Acid. Citric.* and *Form.* 123, 168.) Incompatible Substances. *Acids* and *acidulous salts; borax; muriate of ammonia; acetate of ammonia; alum; sulphate of magnesia; lime water; nitrate of silver; ammoniated copper; muriate of iron; sub-muriate and oxy-muriate of mercury; acetate of lead; tartarized antimony: tartarized iron; the sulphates of zinc, copper, iron*, &c. Dose, grs. x to ʒss.

POTASSÆ NITRAS. L.E. Nitrum. D.

Nitre, or *Salt Petre.*

Qualities. *Form*, crystals which are six-sided prisms usually terminated by dihedral summits: *Taste*, bitter and sharp with a sensation of cold. Chemical Composition. It consists of one proportional of nitric acid, and one proportional of potass. Solubility. It dissolves in seven parts of water at 60°, and in its own weight at 212°. Its solubility is considerably increased by adding muriate of soda to the water; its solution is attended with a great reduction of temperature; it is quite insoluble in alcohol. Incompatible Substances. *Alum; sulphate of magnesia; sulphuric acid; the sulphates of zinc, copper, and iron;* according to the usual laws of affinity, it should be also decomposed by *sulphate of soda;* this however only takes place at the temperature of 32°, and then but partially. Med. Uses. Refrigerant, in which case the draught should be swallowed immediately after the solution of the salt is complete, for if it be allowed to stand for some time, its effect with regard to cooling is not nearly so evident (see *Form.* 138, 144;) as a diuretic, its powers are too inconsiderable to be employed, except in combination (*Form.* 102, 109, 115, 170;) a solution of ʒj to f℥vj of rose water forms a good detergent gargle, and a small portion allowed to dissolve slowly in the mouth, will frequently remove an incipient inflammation of the tonsils; for its *modus operandi* as a diuretic, see *Potassæ Acetas.* Dose, grs. x to xv, as a diuretic or refrigerant; grs. xxv to xl are aperient, and in large doses it excites vomiting, bloody stools, convulsions, and even death. The best antidotes are opium and aromatics. Impurities. As it occurs from the hand of nature it is far from pure, and even by art it is freed with difficulty from sea-salt; the presence and quantity of which in any specimen, may be learnt by adding nitrate of silver to its solution as long as any precipitate is produced.

POTASSÆ SUB-CARBONAS. L.E.

Sub-Carbonas Kali. D.
Kali Præparatum. P.L. 1787. *Sal Absinthii.*
Sal Tartari. 1745.

Before the nature of this salt was well understood, it received various appellations according to the different methods by which it was procured, and it was supposed to possess as many different virtues, as *Salt of Wormwood; Salt of Tartar, &c.*

Qualities. *Form,* coarse white grains, so deliquescent, that, by exposure to air, they form a dense solution, (*Oleum Tartari per deliquium,* P.L. 1720.) Chemical Composition. This salt, although far from being pure, is sufficiently so for every pharmaceutical purpose. It consists of one proportional of acid, and one proportional of potass, with variable quantities of *sulphate of potass, muriate of potass, siliceous earth, alumina,* together with the *oxides of iron and manganese.* Solubility. It is dissolved by twice its weight of water; the residue, if any, may be considered as impurity; it is insoluble in alcohol;

with oils it combines, and forms soaps. Incompatible Substances. They are enumerated under *Potassæ Carbonas.* Medical Uses. Antacid and diuretic, (*Form.* 101, 107, 129,) but it is far less pleasant than the carbonate; it is principally used for making saline draughts, see *Acid Citric.* and *Form.* 107. Dose, grs. x to ʒss. Officinal Prep. *Potassæ Acetas,* (𝕴) L.E.D. *Liquor Potassæ* (𝕶) L.E.D. *Potassæ Sulphuretum* (𝕴) L.E.D. *Potassæ Tart.* (𝕴) L.E D. *Liquor Arsenicalis* (𝕴. 𝕷.) Adulterations. Its degree of purity may be estimated by the quantity of nitric acid of a given density, requisite for the saturation of a given weight. The purest *sub-carbonate* is that obtained by incinerating *cream of tartar,* since most of the impurities are decomposed by the heat during the process, (*Sub-carbonas Potassæ Purissimus.* E.); it however generally contains lime.

POTASSÆ SULPHAS. L.E. Sulphas Kali. D.

Kali Vitriolatum. P.L. 1787.

Tartarum Vitriolatum, 1745, and 1720.

Sal de duobus, &c.

Qualities. *Form,* crystals which are rectangular, (but not square) prisms, modified on the edges and angles, or double six-sided pyramids with short intervening prisms, which are macles, or hemetrope crystals; they are slightly efflorescent, and when heated they decrepitate. Solubility. f℥j of water dissolves only grs. 24: the salt is insoluble in alcohol. Incompatible Substances. It is partially decomposed by the nitric and muriatic acids, in which case, a portion of the base being saturated, a corresponding portion of *bi-sulphate* results; this fact illustrates a chemical law of some importance, viz. *that a substance less weakly attracted by another than a third, will sometimes precipitate this third from its combination with the second, in cases wherein a* super *or* sub-*salt is readily formed.* The history of tartrate of potass will furnish farther illustrations. See vol. i. p. 221. Sulphate of potass when in solution, is entirely decomposed by *lime* and *its compounds;* by *oxy-muriate of mercury; nitrate of silver;* and by *acetate* and *subacetate of lead.* Medical Uses. On account of its insolubility, it does not possess much activity as a purgative, but is said to be powerfully deobstruent; it should be exhibited in the form of powder, and in conjunction with rhubarb, or some other purgative medicine. Dose, grs. x to ʒss. *Form.* 94. From its hardness and insolubility, it is a most eligible substance for triturating and dividing powders. **Officinal Prep.** *Pulvis Ipecac. co.* L.E.D. (𝔐) Under the name *Sulphas potassæ cum Sulphure*, the Edinburgh college retains the preparation formerly known by the name *Sal Polychrest* (*Salt of many virtues*;) and as it is produced by deflagrating nitre with sulphur, the product, besides sulphate of potass, contains *bisulphate* and *sulphuret of potass*. It possesses no superiority over the common sulphate.

POTASSÆ SUPER-SULPHAS. L.

Sal Enixum of Commerce.

Qualities. *Crystals*, long hexangular prisms; *Taste*, sour and slightly bitter. **Chemical Composition.** It is a bi-sulphate, consisting of two proportionals of acid, and one proportional of base. **Solubility.** It is soluble in twice its weight of water, as well as in alcohol. **Med. Uses.** It affords a convenient mode of exhibiting sulphuric acid combined with a saline purgative, in a solid form; as it is more soluble, so is it more active than the sulphate. **Dose**, grs. x to ʒij. It forms a grateful adjunct to rhubarb. See *Form.* 85.

POTASSÆ SULPHURETUM. L.E.

Sulphuretum Kali. D.

Kali Sulphuretum, P.L. 1787. *Hepar Sulphuris.*

Qualities. *Form*, a hard brittle mass; *Colour* liver brown, hence the old name of *hepar*; *Taste*, acrid and bitter; *Odour*, none when dry, but if moistened, it yields the stench of sulphuretted hydrogen. **Chemical Composition.** It is not a perfect chemical sulphuret, as the alkali employed for its preparation is in the state of *sub-carbonate*; it consists of sulphur, potass, and a proportion of carbonic acid. **Solubility.** Although soluble in water, it is changed during its solution, the greatest portion being converted into an *hydroguretted sulphuret*, and a part into *sulphate of potass*. **Incompatible Substances.** *Acids; acidulous salts; earthy and metallic salts.* **Medical Uses.** It presents us with a form in which sulphur is soluble in water; it is diaphoretic, and has been found advantageous in cutaneous affections, (*Form.* 118,) and in arthritic and rheumatic complaints; while, from its known chemical action on metallic salts, it has been proposed as an antidote to such poisons. Its solution has been lately recommended as a lotion for the itch of infants, and in some cases it has been known to succeed after the sulphur ointment had failed.

POTASSÆ SUPER-TARTRAS. L.E.

TARTARUM CRYSTALLI. E.

Super-Tartrate af Potass. Crystals of Tartar.

QUALITIES. *Form*, small irregular brittle crystals, which, when reduced to powder, are termed *cream of tartar*. *Taste*, harsh and acid. CHEMICAL COMPOSITION. It is a *bi-tartrate*, consisting of two proportionals of acid, and one proportional of potass. SOLUBILITY. It requires 120 parts of water at 60°, and 30 parts at 212°, for its solution; it is slightly soluble in alcohol. The watery solution of this salt was first observed by Berthollet to undergo a spontaneous decomposition by keeping, during which a mucous matter is deposited, and there remains a solution of carbonate of potass coloured with a little oil. It has long been regarded a pharmaceutical desideratum to increase the solubility of *cream of tartar*; Vogel discovered that it might be accomplished by combining it with boracic acid, and accordingly a formula has been introduced into the Codex Medicamentarius of Paris, for preparing a "*Tartras Acidulus Potassæ Solubilis, admixto Acido Boracico*." The following is the process. Let thirty parts of boracic acid, and twenty parts of distilled water be heated together in a silver dish; as soon as this has been effected, add, in divided portions, 120 parts of supertartrate of potass, taking care to shake the mixture continually; the whole will soon liquefy, ("*mire liquescent*,") and by continuing the heat, a pulverulent mass will result. As it is extremely deliquescent it must be carefully preserved from the contact of the air; it dissolves in its own weight of water at 55°, and in half its weight at 212°.

It is probable that the result is a new salt, in which the boracic and tartaric acids exist in combination,* but grant even that the chemical identity of the supertartrate is preserved inviolate in the compound, I would ask what medical advantage can possibly attend the discovery? The peculiar value of cream of tartar depends doubtless upon its comparative insolubility, as I have already stated in the *First Volume*, *page* 209; modify this, and you will instantly change the medicinal effects of the salt; for like the neutral tartrate it will act upon the bowels, and therefore cease to undergo those changes *in transitu* which are essential to its characteristic operation. Alum also has been observed by Berthollet to have in some measure the same effect in increasing the solubility of cream of tartar.

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* It may be termed a *Boro-tartrate*.

INCOMPATIBLE SUBSTANCES. *Alkalies* and *alkaline earths*; the *mineral acids*, *&c.* MEDICAL USES. In doses of ʒiv to ʒvj, it acts as a hydragogue cathartic, producing a considerable discharge of serous fluid into the intestines; when, however, it is often repeated, it is liable to occasion debility of the digestive organs, and consequent emaciation; in smaller doses it acts as a diuretic, (*Form.* 112,) ʒj in oj of boiling water, flavoured with lemon peel and sugar, forms when cold an agreeable cooling beverage well known by the name of *Imperial.* As it decomposes the carbonate of potass, the union of these salts will afford a very pleasant purgative draught. (*Form.* 82.) OFFICINAL PREP. *Pulv. Jalap. comp.* (𝔅𝔍𝔐) E. *Pulv. Scammon.* E. *Pulv. Sennæ comp.* L. *Ferrum Tartarizatum,* (𝔍) L. *Antimonium Tartarizatum,* (𝔍) L.E.D. *Soda Tartarizata* (𝔍) L.E.D. ADULTERATIONS. Super-sulphate of potass, *Sal Enixum,* is the substance with which tartar is usually adulterated; it may be detected by its superior solubility, and by the solution affording with muriate of baryta a precipitate insoluble in muriatic acid.*

POTASSÆ TARTRAS. L. TARTRAS POTASSÆ.

Olim Tartarum Solubile. E. TARTRAS KALI. D.
Kali Tartarizatum. P.L. 1787.
Tartarum Solubile. P.L. 1745.

QUALITIES. *Form,* this salt, although ordered to be crystallized, is generally kept in its granular form. *Taste,* bitter and cool. CHEMICAL COMPOSITION. It consists of one proportional of acid, and one proportional of base. SOLUBILITY. When in its crystalline form it is soluble in its own weight of water, but in its ordinary granular form, 4 parts are required for its solution; hence, compared with the insoluble super-tartrate, it has justly acquired the name of *soluble* tartar; when long kept in solution, its acid is decomposed, and its alkali remains in a state of *sub-carbonate.* It is also readily soluble in alcohol. INCOMPATIBLE SUBSTANCES. *Magnesia, baryta,* and *lime*; *acetate* and *sub-acetate of lead,* and *nitrate of silver* decompose it. All acids, even the *carbonic*,† and *acidulous salts*, *tamarinds*, and other *sub-acid vegetables*, by neutralizing a proportion of the base, convert it into the state of super-tartrate; this fact offers another illustration of the chemical law of affinity, explained under the head of *sulphate of potass*. The practitioner should bear this in his recollection, for I have frequently seen a dose of *soluble tartar* directed in the acidulated *infusion of roses;* the result was of course very different from that which the author of the prescription intended to produce. **Med. Uses.** It is a mild and efficient purgative, and forms a very valuable adjunct to resinous purgatives or to senna, the griping properties of which it corrects by accelerating their operation. *Form.* 70. **Dose.** ʒj to ʒj, in solution.

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* ESSENTIAL SALT OF LEMONS. The preparation sold under this name, for the purpose of removing iron moulds from linen, consists of cream of tartar and super-oxalate of potass, or *salt of sorrel*, in equal proportions.

† See Vol. I. p. 221.

[PRUNUS VIRGINIANA. *W. II.* 985. *Cortex.*
Wild Cherry-tree. The Bark.

Description and Specific Character. A native tree, growing in all parts of the United States. Leaves deciduous, alternate, oval-oblong, acuminate, serrate, smooth; flowers in racemes, of a white colour, appear in the month of May, are succeeded by small dark red berries of an astringent, sweetish, and bitter taste. The bark of all parts of the tree is medicinal, but that of the roots is the most active. **Sensible Properties.** When fresh, it emits an *odour* somewhat like that of the peach leaves; *colour*, reddish-brown or cinnamon; *taste*, astringent, slightly pungent, and bitter, **Solubility.** Its active properties are readily soluble in boiling water. **Medical Use.** It has long been regarded as a useful tonic, and has often been successfully employed as a substitute for Peruvian bark in the treatment of intermittent fevers. Notwithstanding its aromatic and pungent sensible properties, those physicians who have been most familiar with its effects, have generally agreed in representing it to be less liable to increase excitement than cinchona, and therefore a more suitable tonic, in diseases accompanied with local inflammation or an inflammatory diathesis. It has also been observed, that when taken in large doses, it frequently produced narcotic effects. Since the profession has been investigating the nature and medicinal character of *prussic acid*, the narcotic qualities of the Cherry-tree bark have been supposed to be owing to the presence of that powerful agent; and its operation is certainly just such as might be apprehended from a stimulant and tonic substance, somewhat milder in its action than cinchona, modified by the peculiar influence of prussic acid. The experience of

Dr. Chapman leads him to remark of this bark, that "it is well suited to the hectic of phthisis, and perhaps equally so when proceeding from other causes;—by a judicious management of it, we shall occasionally find, in consumption, the cough relieved, diarrhœa restrained, profuse perspiration abated, appetite invigorated, and the general strength sustained, though," he adds, "it is still a mere palliative of the disease."* It has been administered with decisive benefit as a deobstruent in the visceral derangements consequent upon intermittent fever. I have also found it an excellent tonic in dyspepsy. It is said to possess some merit as an antispasmodic, and to have given relief in severe paroxysms of asthma. Doses. ʒj to ʒij of the powdered bark; ℥ij to ℥iv of a strong infusion.—I.]

PULVERES. L.E.D. *Powders.*

For the administration and advantages of this form of preparation, see *vol.* i. *page* 228. The following Officinal Formulæ offer some valuable combinations.

Pulvis Aloes compositus. L. Pulvis Aloes cum Guaiaco. D. It consists of aloes *three parts*, guaiacum *two*, (𝕲) and compound powder of cinnamon *one part* (𝕮). It combines sudorific and purgative effects. *Dose*, grs. x to ℈j. See *Form*. 80.

Pulvis Aloes cum Canella. D. and P.L. 1807. Aloes *four parts*, white canella (𝕰) *one part*. It is known in the shops by the name of *Hiera Picra*. The compound is more adapted for the form of pills than that of powder. It is very generally used by the lower classes, infused in gin. *Dose*, grs. x to ℈j.

Pulvis Antimonialis. L. D. Oxidum Antimonii cum Phosphate Calcis. E. This preparation was introduced into the Pharmacopœia, as the succedaneum of the celebrated *fever powder of Dr. James*,† the composition of which was ascertained by Dr. George Pearson. (*Phil. Trans.* lxxxi. 317.) It consists of 43 parts of the phosphate of lime, mixed, or perhaps chemically combined, with 57 parts of oxide of antimony, of which a portion is vitrified; and it is probable, that the difference of the two remedies depends principally upon the quantity of oxide which is vitrified: the specification of the original medicine is worded with all the ambiguity of an ancient oracle, and cannot be prepared by the process as it is described. Experience has established the fact, that *James's Powder* is less active than its imitation; it affects the bowels and stomach very slightly, and passes off more readily by perspiration; in general, however, the difference is so inconsiderable, that we need not regret the want of the original receipt. As it is quite insoluble in water, it should be given in powder, or made into pills. It is diaphoretic, alterative, emetic, or purgative, according to the extent of the dose and the state of the patient; in combination it offers several valuable resources to the intelligent practitioner. (See *Form.* 119, 121, 125, 129, 134.)*

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* Elements of Therapeutics and Materia Medica, Vol. II. Page 440. 2d Edition.

† James's Analeptic Pills. These consist of James's powder, gum ammoniacum, and the pill of aloes with myrrh, (*Pil. Rufi*) equal parts, with a sufficient quantity of the tincture of castor to make a mass.

Pulvis Cinnamomi Compositus. L. Cinnamon bark *four*, cardamom seeds (𝔙) *three*, ginger root (𝔙) *two*, long pepper (𝔙) *one part.* It is principally used to give warmth to other preparations, e. g. *Pulv. Aloes comp.* L.D.

Pulvis Contrayervæ Compositus. L. Contrayerva *five*, prepared shells, *eighteen parts.* (𝔐) Dose, grs. x to xl. It is said to be stimulant and diaphoretic.

Pulvis Cornu Usti cum Opio. L. Opium *one part*, burnt hartshorn *eight*, powdered cochineal *one part.* Ten grains contain one of opium.

Pulvis Cretæ Compositus. Prepared chalk *twelve parts*, tormentil root, (𝔗) acacia gum, (𝔐) of each *six*, cinnamon

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* While correcting the present sheet for the press, a paper has appeared in the *Annals of Philosophy, for October*, 1822, by Mr. Richard Phillips, of too important a character to be passed over without notice, as not only raising a question with respect to the chemical composition of this powder, but with regard to its medicinal efficacy.

In consequence of the antimonial powder having proved inert in the hands of Dr. Elliotson, although exhibited to the amount of a hundred grains for a dose, Mr. Phillips was induced to examine more particularly into the nature of the oxide which enters into its composition. "After the well-established fact," says he, "that *peroxide* of antimony is nearly or totally inert, it appears to me, that if proof could be obtained, that the oxide of antimony is in this state, the deficiency of power in the *Pulvis Antimonialis* would be accounted for." He then proceeds to detail his experiments, from which he deduces the composition of this preparation to be as follows:

Peroxide of Antimony	35
Phosphate of Lime	65
	100

Which exist together in a simple state of mixture. Until the subject be elucidated by farther experiments, it will be difficult for the chemist to persuade the physician, that he can never have derived any benefit from the exhibition of *Antimonial Powder*.

bark *eight*, (𝔈) long pepper (𝔈) *one part*. It is antacid, astringent, and carminative. *Dose*, grs. v to ℈j.

Pulvis Cretæ Compositus cum Opio. L. Compound powder of chalk *thirty-nine parts*, opium *one part*. *Form*: 151.

Pulvis Ipecacuanhæ Compositus. L.E.D. Ipecacuan *one part*, opium (𝔇) *one part*, sulphate of potass (𝔐) *eight parts*. This combination has been long established in practice, as a valuable sudorific, under the name of *Dover's Powder*. It affords one of the best examples of the power which one medicine possesses of so changing the action of another, as to produce a remedy of new properties; in this combination the opium is so modified, that it may be given with perfect safety and advantage in inflammatory affections accompanied with increased vascular action: it would seem that whilst the opium increases the force of the circulation, the ipecacuan relaxes the exhalent vessels, and causes a copious diaphoresis: the sulphate of potass is also an important ingredient, for experience has fully proved that ipecacuan and opium in the same proportions, have not so powerful an effect without it; its action must be purely mechanical, dividing and mixing the active particles more intimately, and it appears that the success of the remedy depends very much upon its being finely powdered. *Dose*, grs. v to ℈j, diffused in gruel, or in the form of a bolus. (See *Form*. 120, 121, 122.) The saline constituent in the original *Dover's Powder* was the result of the deflagration of nitre, and was therefore deliquescent; its dose was as much as from 40 to 70 grains. In the *Codex* of Paris, this compound is directed to be prepared by melting together *four parts* of sulphate of potass, with an equal proportion of nitrate of potass; to which when nearly cold is to be added, and well mixed by triture, *one part* of pulverized extract of opium; the powders of ipecacuan and liquorice-root, of each *one part* are to be added last. It is evident that the proportions of opium and ipecacuan in this combination, are less than those in ours, and yet it is said to be more powerfully diaphoretic on account of the nitre. An arrangement, which is indebted for its medicinal virtue to a similar mode of operation, is presented in *Form*. 130.

Pulvis Scammoniæ Compositus. L. Scammony and hard extract of jalap, of each *four parts*, ginger root, (𝔈) *one part*. The Edinburgh preparation of the same name differs very materially in composition, its ingredients being scammony and cream of tartar in *equal parts*.

Pulvis Tragacanthæ Compositus. L. Powdered Tragacanth, acacia gum, and starch, of each *one part*; refined sugar, *two parts*. From what has been already stated under the head of mucilage of tragacanth, it appears to be a superfluous, if not an injudicious demulcent; and since starch is insoluble in cold water, the object for introducing it is not very obvious. *Form.* 120.

Powders should be preserved in opaque green bottles, as they are materially affected by the action of light and air. Many of the compound ones should be considered as extemporaneous, and ought to be prepared only when they are required. The practitioner is also cautioned against purchasing any medicine in its powdered form, for so universal is the system of adulteration, that regular formulæ are observed in the wholesale houses for sophisticating powders, and Mr. Gray, in his "*Supplement to the Pharmacopœias*," has given several specimens, under the title of "*Pulveres Reducti.*"

PYRETHRI RADIX. L.E.D.

(Anthemis Pyrethrum. *Radix.*)

Pellitory Root.

Qualities. The dried root is inodorous, but upon chewing it, it soon produces a pungent and peculiar sensation. Solubility, alcohol, æther, and boiling water extract its virtues. Chemical Composition. *M. Gautier* has lately shown that the peculiar pungency of this root depends upon a fixed oil, which resides in vesicles in the bark. Medical Uses. As a sialagogue, especially in cases of toothach, and in paralysis of the tongue and muscles of the throat. (*Form.* 143.) It also constitutes the basis of a very valuable gargle, in use at St. Bartholomew's Hospital, for relaxation of the uvula and soft palate, as well as in certain cases of deafness depending upon an enlarged state of the tonsils. It is made by boiling ℥ss of the bruised root in oj of distilled water, and the fluid is reduced to one half; to which, when strained and cold, f℥ij of *Liquor Ammoniæ* are to be added.

[PYROLA UMBELLATA. *W. II.* 622. *Bw. II.* 15. CHIMAPHILA UMBELLATA. *Bn. I.* 17. *Herba.*

Pyrola Pippsissewa. Ground Holly. The whole Plant.

Specific Character. Stems erect, from six to eight inches high, hard and ligneous at the base: leaves mostly in branches or whorls, subsessile, decurrent on the petiole, lanceolate, somewhat wedge shaped, of a shining green colour. An evergreen plant, growing plentifully in dry forests, in almost all parts of the country. Flowers in June and July. *Taste*, bitter. Chemical Composition. Resin, gum-resin, tannin, and bitter extractive. Solubility. Alcohol and proof spirit are its best menstrua, but the plant grows so abundantly, and is so easily procured, that it is more economical to exhibit it in watery infusion than in the form of tincture, and the former does not appear to be a less efficacious preparation than the latter. Medical Use. Tonic and diuretic. Much has been said of its alterative and deobstruent properties, but this appears to have resulted from its invigorating effects upon the stomach, thereby extending its tonic influence to the surrounding viscera, in common with other parts of the system; for there is no evidence that it acts specifically, on any other, than the urinary, organs. The elder Dr. Barton supposed it to be antilithic, but subsequent observation seems to have invalidated that opinion; nevertheless it will be granted by all who are familiar with its operation, that as a diuretic it has unquestionable merit, and that, like *uva ursi*, it will frequently mitigate symptoms of gravel, and strangury proceeding from other causes. I have given it, alternately with the uva ursi, in hæmaturia: the effects of severe and long-continued gonorrhœal inflammation, with the most obvious benefit. It is very analogous in its effects to this article.* In some instances it has appeared to afford great relief in chronic cutaneous diseases. Further observation is necessary to define the mode and extent of its medicinal operations, but there is no hazard in saying that it is a medicine possessing considerable activity. Doses. ʒj to ʒij of the tincture; ℥ij to ℥iv of the infusion, prepared by pouring a pint of boiling water upon ʒj of the stalks and leaves. These may be given every two or three hours.—I.]

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* I cannot subscribe to the opinion of Dr. Paris that the uva ursi is justly falling into disuse. Its modus operandi may not be well explained, and its lithontriptic properties may be altogether hypothetical; and still, it may consistently be believed to be an efficacious remedy in affections of the kidneys and urinary bladder, particularly when such belief is founded on experience and supported by analogy. How many medicines are there, the salutary operation of which can neither be denied nor explained?

QUASSIA. L.E.D (Quassia Excelsa. *Lignum.*)
Quassia.

This wood owes all its properties to a peculiar bitter principle, which has been examined by Dr. Thomson and named *Quassin;* it is solid, slightly transparent, and of a yellowish brown colour. (See *Infusum Quassiæ.*) It is said to owe its name to a West Indian negro, called Quassi, who first used it in fevers.

QUERCUS CORTEX. L.E.D.
(Quercus Pedunculata. *Cortex.*)
Oak Bark.

Qualities. *Odour*, none; *Taste*, rough and astringent. **Chemical Comp.** We are indebted to Sir H. Davy for a knowledge of this subject; he found that an ounce of the inner cortical part of young oak bark afforded by lixivation 111 grains of solid matter, of which 77 were *tannin;* and the cellular integument, or middle-coloured part, only yielded 43 grains of solid matter, of which 19 were *tannin;* and the epidermis furnished scarcely any quantity of *tannin* or extractive; hence the bark should be selected from the smaller branches of the oak where the epidermis is still thin. Experience has, moreover, shown that the quantity of *tannin* varies considerably, not only according to the age and size of the trees, but according to the season at which they are *barked;* thus, the bark cut in spring contains, according to *Beguin*,* four times more of the astringent principle, than that which is obtained in winter. **Med. Uses.** All its properties depend upon the presence of *tannin*, it is therefore only valuable as a powerful astringent; it is accordingly employed to check inordinate discharges, see *Decoctum Quercus.* Oak bark is sometimes administered in the form of powder, combined with ginger and other aromatics, and bitters, for the cure of intermittents, and it has frequently succeeded, but see *vol. i. p.* 202. **Dose**, ℈j to ʒss.

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* Philosophical Transactions, 1799.

RHEI RADIX. L.E.D. *Rhubarb.*[*]

Two varieties of this root are known in the shops, viz. *Turkey* or *Russian*, and *East Indian* or *Chinese*.

1. TURKEY OR RUSSIAN. (*Rheum Palmatum.*)

QUALITIES. *Form*, small round pieces, rather compact and heavy, perforated in the middle; *Colour*, lively yellow with streaks of white; it is easily pulverized, affording a powder of a bright buff-yellow colour. CHEMICAL COMPOSITION. Gum, resin, extractive, tannin, gallic acid, and a peculiar colouring matter, with traces of alumina and silex; the white or flesh-coloured streaks pervading its substance, consist of sulphate and oxalate of lime: according to the experiments of Mr. John Henderson, there is besides a peculiar vegetable acid, to which he has given the name of *Rheumic* acid, but M. De Lassaignes has satisfactorily proved that this is no other than the oxalic acid: the purgative powers of the root appear to be intimately connected with its extractive and resinous elements, but the subject is still involved in considerable obscurity. SOLUBILITY. Water at 212° takes up 24 parts in 60, see *Infusum Rhei*: by decoction, its purgative qualities are lost, and it becomes more bitter and astringent; alcohol extracts 2·7 from 10 parts, (see *Tinct. Rhei.*) MED. USES. In this substance, Nature presents us with a singular and most important combination of medicinal powers, that of an astringent, with a cathartic property; the former of which never opposes or interferes with the energy of the latter, since it only takes effect when the substance is administered in small doses, or if given in larger ones, not until it has ceased to operate as a cathartic; this latter circumstance renders it particularly eligible in cases of diarrhœa, as it evacuates the offending matter before it operates as an astringent upon the bowels. It seems to act more immediately upon the stomach and small intestines, and therefore in relaxed and debilitated states of these organs, it will prove an easy and valuable resource; it may, for such an object, be exhibited in conjunction with alkalies, bitters, and other tonics. Its cathartic property is most efficient when given in substance. It was formerly supposed that by toasting rhubarb we increased its astringency, but this process merely diminishes its purgative force, so that a larger dose may be taken. The colouring matter of rhubarb may be detected in the urine of persons to whom it has been exhibited; it does not, however, appear to possess any specific powers as a diuretic. Dose, grs. vj to x as a tonic; ℈j to ʒss as a purgative; the operation of which is considerably quickened by the addition of neutral salts; the super-sulphate of potass forms also a very useful adjunct, and its acidulous taste completely covers that of the rhubarb. *Form:* 83, 85. Its powder, when sprinkled upon ulcers, is found to promote their healthy granulation. Officinal Prep. *Infus: Rhei:* L.E. *Vinum Rhei Palmati.* E. *Tinct. Rhei.* L.E.D. *Tinct. Rhei. comp.* L. *Tinct. Rhei cum Aloe.* E. *Tinct. Rhei cum* Gentian. E. *Pil. Rhei comp.* E.

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[*] WARNER'S CORDIAL. Rhubarb bruised ℥j; Sennæ ℥ss; Saffron ʒj; Powdered Liquorice ʒiv; Raisins pounded ℔j; Brandy oiij: digest for a week and strain.

2. East Indian, or Chinese. (*Rheum* Undulatum?*)

Qualities. *Form*, long pieces, sometimes flat, as if they had been compressed; they are heavier, harder, and more compact than those of the preceding species, and are seldom perforated with holes; *Odour*, stronger; *Taste*, more nauseous; white streaks less numerous, and it affords a powder of a redder shade than *Turkey* rhubarb. Chemical Composition. It differs from the *Turkey* in containing less tannin and resin, and according to the experiments of Mr. A. T. Thomson, less oxalate of lime, in the ratio of 18 to 26. It contains, however, more extractive and gallic acid. Solubility. Water takes up one half of its weight, but the infusion, although more turbid, is not so deep coloured as that of Russian rhubarb; alcohol extracts 4 parts in 10. Its habitudes with acids, alkalies, and neutral salts, differ likewise from those of the Russian variety, as Mr. A. T. Thomson has exhibited in a very satisfactory manner. (*London Dispensatory, Edit.* 3, *p.* 474.) Adulterations. The inferior kinds of *Russian*, *East Indian*, and even *English* rhubarb, are artfully dressed up and sold under the name of Turkey rhubarb. I am well informed that a number of persons in this town, kno[illegible] in the trade by the name of *Russifiers*, gain a regular livelihood by the art of dressing this article, by boring, rasping, and then colouring the inferior kinds; for which they charge at the rate of eighteen pence per pound. The general indications of good rhubarb are, its whitish or clear yellow colour, and its possessing the other characteristic properties as above mentioned; it ought also to possess in an eminent degree the peculiar odour, for when this is dissipated, the powers of the medicine are nearly destroyed. In the form of powder, rhubarb is always more or less mixed with foreign matter; the detection of which can be alone effected by a trial of its efficacy.

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* Dr. Rehman asserts that it is the root of the same species as that which produces the Turkey variety, but that it is prepared with less care.

[RHUS GLABRUM. *W. I.* 1478. *Gallæ, Baccæ.*

Sumach. Sleek Sumach. The galls. The berries.

Specific Character. Branches, petioles, and leaves glabrous; leaves pinnate, many-paired; leafets lance-oblong, serrate, whitish beneath; fruit silky. It grows in dry uplands from Canada to Carolina, but most abundantly in the Western states of Ohio and Indiana. From six to ten feet high. Flowers in July. Berries red. The berries are the only part of this plant hitherto recommended by authors as valuable to the physician. They are acid and astringent, not unpleasant to the taste, and when infused in boiling water make a very good gargle in passive inflammation and ulcerations of the throat.*

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* For the following interesting analysis of these berries, I am indebted to Mr. Issachar Cozzens, Jun. an ingenious practical chemist of this city. It was formerly supposed that the acid they contain was the Tartaric. *Dr. Bigelow* thought it might be sui generis.

"*Examination of the acid in the berries of the common Sumach.*"
(Rhus Glabrum of Linnæus.)

The berries of the Sumach ripen in the month of November, forming large clusters of a bright red colour. These have long been known to yield a pleasant, pretty powerful acid, which is sometimes used by the country people for medicinal purposes, or as a substitute for lemons to make a pleasant beverage. To determine the nature of this acid I made the following examination.

1. A strong infusion of the berries was made by pouring warm distilled water on them, and using a fresh portion of berries till a very acid liquor was obtained.

2. This liquor was filtered, and a solution of potassa added to it, till it was neutral. To ascertain whether the acid was the tartaric, another portion of the acid liquor was added, but no crystals of supertartrate of potash were formed.

3. Another portion of [illegible] acid was saturated with carbonate of lime, this was filtered and concentrated. A salt of lime was formed which was insoluble in cold water, but dissolved readily in water boiling hot. To the solution in boiling water, alcohol was added which gave a beautiful coagulated white precipitate. This, when dried, was readily dissolved in hot water.

4. The acid solution was then treated with submuriate of mercury. It formed a dirty white precipitate.

5. With acetate of lead it forms a white precipitate.

6. With nitrate of silver, a decomposition takes place.

7. With sulphate of iron, a small portion of gallic acid is detected.

From these experiments, I conclude that the acid of the sumach is the Malic, and that it is nearly pure, being only contaminated with a small portion of gallic acid, probably proceeding from the pulp of the berries.

But the sumach is here introduced principally for the purpose of inviting attention to the galls or excrescences found upon its leaves, and which are not only the most valuable part of the plant, but promise to become an article of commerce of greater importance than almost any vegetable which grows spontaneously in our country. I was informed by Dr. D. Walters of this city, that he had used them as a substitute for the Aleppo galls during the last ten or twelve years, and that they were in every respect preferable to them; that in travelling through the states of Ohio and Indiana, his attention was attracted by the enormous quantities which were growing there, and which, he believed, might be profitably collected for one dollar a bushel; that they were from the size of a hazelnut to that of a black walnut: like the Aleppo galls, many of them were perforated by insects. A few years ago these galls were accurately analyzed, and made the subject of an inaugural dissertation, by a graduate of the College of Physicians and Surgeons of this city. That dissertation has not yet been published, but the author, Dr. Foster, has demonstrated most conclusively the correctness of Dr. Walters's statement, with regard to their qualities. They appear, when dry, to consist almost entirely of a concrete juice which is soluble in water, (more soluble than the Asiatic galls,) containing tannin and gallic acid in great abundance. They are powerfully astringent, and are not inferior to the Aleppo galls, for any of the purposes for which they are used.

If, as there is good reason to believe, the foregoing information is correct, it will readily be perceived that these galls, which can be obtained, in sufficient quantities to supersede the use of the imported ones, for one-fortieth of their cost, may ultimately become an article of incalculable profit to the country.—I.]

On carefully inspecting the sumach berries, they are seen to be clothed by a down or pubescence, and the acid principally resides in this substance. For after it is washed off by warm water, the berries are entirely free from any acid taste.

I shall conclude this paper with a process for preparing, with very little trouble, a pure *malic acid* from these berries, which may be used for all the purposes of the citric acid.

Process. Rub the berries in boiling rain or distilled water, filter the liquor and evaporate it in a *well tinned* vessel to the consistence of a syrup, taking care not to burn it. Then add to it an equal quantity of alcohol, this will unite with the acid, leaving the mucilage and other impurities behind. An equal quantity of water is now to be added, and the whole distilled to obtain the alcohol. The malic acid will be left in the retort, which may be poured out when cold."

RICINI[*] OLEUM. L.E.D. (*Ricinus Communis.*) *Castor Oil.*

Qualities. *Form*, a viscid and colourless, or pale straw-coloured oil; it is nearly inodorous, but, on being swallowed, excites a slight sensation of acrimony in the throat. It has all the chemical habitudes of the other expressed oils, except those which relate to its solubility in alcoholic and ethereal menstrua. Med. Uses. It is mildly cathartic, and is particularly eligible in cases where stimulating purgatives would prove hurtful, but in obstinate constipation, where copious evacuations are required, this oil cannot be trusted, it will insinuate itself through the intestinal canal, bringing with it a small portion of the more fluid contents, but leaving behind it the collection of indurated fæces. Forms of Exhibition. The most efficacious mode of administering it is by floating it upon tincture of senna, or peppermint water, or some other similar vehicle; it is also sometimes given with success in coffee or mutton broth, or suspended in water by the intervention of mucilage, yelk of egg, (*Form.* 75,) or by honey, which at the same time contributes to its laxative operation; alkalies, although they form an emulsion with it, convert it into a saponaceous compound, and impair its cathartic force. Dose, f℥ss to f℥iss. Adulterations. It is usually adulterated with olive oil or poppy oil, and when to a considerable extent, scammony is added to quicken its operation. There is however a peculiarity in castor oil which serves to distinguish it from every other fixed oil, viz. its great solubility in rectified spirit; for instance, f℥iv of alcohol of ·820 will mix uniformly with any proportion of castor oil, whereas it will not dissolve more than fʒj of *Linseed Oil*; and a still less proportion of the expressed oils of almonds and of olives; when the spirit is diluted, its action on all these oils is equally diminished, so that common *spirit of wine* has but little power even over castor oil; but here chemistry again interposes its aid, for by the addition of camphor, in the proportion of one part to eight of spirit, spirit of ·840 is enabled to dissolve castor oil, whilst it has no influence upon the other fixed oils;

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[*] The seeds of this plant, from which the oil is expressed, are variegated with black and white streaks, resembling in shape as well as colour, the insect Ricinis or *Tick*, whence the name. These seeds, from the acrid juice in their skins, are very drastic and emetic; they were however used by Hippocrates. Mathiolus attempted to correct their emetic quality by torrefaction, but without success. Gulielmus Piso proposed a tincture of them, but the preparation is not only uncertain, but unsafe in its operation. See *Tiglii Semina.*

castor oil is also soluble in any proportion in sulphuric æther of the specific gravity ·7563, while four fluid-ounces of the same liquid will only dissolve a fluid-ounce and a quarter of the expressed oil of *Almonds;* a fluid-ounce and a half of that of *Olives;* and two fluid-ounces and a half of *Linseed* oil.

SACCHARUM. L.E.D. *Sugar.*[*]

Sugar, as a pharmaceutical agent, is employed for accelerating the pulverization of various resinous substances, and when exhibited with the most acrid of them, it prevents their adhesion to the coats of the intestines, by which they might irritate and inflame them; it is also extensively used on account of its power in preserving animal and vegetable substances. (*See Conservæ.*) Milk boiled with fine sugar will keep for a great length of time, and might be very conveniently employed during a long voyage. Dr. Darwin also observes that fresh meat cut into thin slices, either raw or boiled, might be preserved in coarse sugar or treacle, and would furnish a very salutary and nourishing diet to our sailors. Sugar exerts also some chemical affinities which are highly interesting to the pharmaceutic chemist. Vogel has published a paper to show, that when sugar is boiled with various metallic oxides, and with different metalline salts, it has the property of decomposing them; sometimes reducing the oxide to the state of metal, and at others depriving the oxide only of one of the proportionals of oxygen; thus, *sulphate of copper* and *nitrate of mercury* are precipitated in a metallic form, whilst *peroxide of mercury* and *acetate of copper* are converted into protoxides; *corrosive* sublimate is changed into *calomel*, but *calomel* is not susceptible of any further decomposition. All those metallic salts which have the power of decomposing water, are not affected by sugar, as those of *iron*, *zinc*, *tin*, and *manganese.*

[SANGUINARIA CANADENSIS.

W. II. 1140. *Bw. I.* 75. *Bn. I.* 31. *Radix.*

Blood-root. Puccoon. Indian paint. The Root.

Specific Character. One of the earliest spring flowers. Leaves radical, heart-shaped, parted into numerous lobes.

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[*] The Sugar cane is called in Arabic *Lukseh*. The produce of it, *Assakur*. hence *Sugar*.

The first leaf which appears, is rolled round the stalk and flower, which it seems to embrace and protect. Flowers single, erect, with two deciduous calyx leaves, and eight beautiful spreading white petals. (*Bigelow.*) It grows in almost every part of the United States, generally to the height of eight or ten inches. The root is perennial, about two or three inches long, terminating abruptly, from one-fourth of an inch to half an inch in diameter; when broken, it yields a copious exudation of a pale red juice. The root is the only part of the plant now to be considered. **Sensible Properties.** *Colour*, on the surface brown, pale red within; *odour*, pungent; *taste*, acrid and bitter. **Solubility.** Its virtues are imparted in different degrees, to water, proof spirit, and alcohol. **Chemical Composition.** "Besides fibrous matter, it contains resin, fæcula, bitter extractive, and an acrid principle." (*Bigelow.*) **Medical Use.** It is not only one of the most valuable of our indigenous medicines, but it may justly be ranked among the most important and useful articles of the materia medica. There appears to have been some discrepance of opinion with regard to the precise place which ought to be assigned to bloodroot in systematic classification, which difference probably arose, partly, from observing that diversified effects resulted from differences in the forms of preparation, doses exhibited, and the condition and susceptibility of the patients; and partly, from its possessing combined properties which are not united in any other substance. The variety and extent of its operation are well described by Dr. William Tully in the 8th vol. of the New England Journal of Medicine and Surgery, and are briefly summed up in the following extract from that paper. "Taken internally, in moderate doses, it increases the excitement of the sanguiferous system, augments the action of the lymphatics of the viscera, excites appetite, and promotes digestion. In larger doses, it nauseates, diminishes sanguiferous action, and still further increased, it vomits. In improper quantities it vomits with much violence, produces heart-burn, faintness, dizziness, diminished vision, and great prostration of strength. Snuffed into the nose it excites sneezing, and applied externally, in diseases of the skin, or to the surface of ulcers, it irritates, promotes absorption, and changes action. It may therefore be considered as tonic, deobstruent, emetic, narcotic, sternutatory, *antipsoraic*, and escharotic. By suitable management and qualification it may be made to produce the most useful effects of squill and senega, without their tendency to vomit and purge; of foxglove, without danger of prostrating the powers of life; of ammoniacum and guaiacum, without their occasional irritation, and of the mineral tonics without their slowness." Page 106. From a careful examination of what written testimony appears to have been founded on personal observation, and from pretty extensive experience of the effects of this article, in numerous forms and in various stages of disease, I am of opinion that when taken in doses as large as the stomach will quietly retain, and under circumstances favourable to its operation, its modus operandi is most conspicuous in allaying morbid irritability of the heart and arteries, thereby diminishing the frequency of the pulse, and in increasing bronchial and cutaneous secretion. It appears not to weaken the force of the circulation, nor, like most narcotic remedies, to depress the energies of the system; on the contrary, its general influence in this respect is unquestionably tonic. Its peculiar and chief remedial excellence, is in subduing phlegmasial diseases of the respiratory organs, after they have arrived at that period in their progress, when depletion with the lancet can be carried no farther; when inflammatory excitement is superseded by excessive irritability,—manifested by restlessness, a rapid and quick pulse, dryness of the surface, scanty secretions, and flushed cheeks;—an irritability which is always increased rather than diminished by continuing depletion. Such appears to me to be the most suitable condition of the blood-vessels for the beneficial exhibition of *sanguinaria.* Under such circumstances, I have witnessed the happiest effects from it in severe and protracted forms of almost every species of cynanche, in pneumonia, pertussis, and particularly in incipient phthisis pulmonalis. It may, indeed, sometimes advantageously accompany the use of the lancet, but only when the violence of inflammatory action has been mitigated, and bleeding is occasionally required to moderate or prevent excitement, as is not unfrequently the case in pneumonia, threatening to terminate in consumption. I have never seen disease, of any character, more obviously, promptly, and effectually subdued, by the agency of medicine, than I have seen incipient phthisis pulmonalis by Blood-root alone. After despairing of relief from other means, and when the disease appeared to be rapidly progressing to a fatal termination, I have known the pulse, which had not for many weeks been fewer than one hundred and twelve in a minute, permanently diminished, (after the use of the Blood-root for twenty-four hours,) to eighty beats, the skin that was obstinately dry, become moist, a most incessant and distressing cough, attended with scanty expectoration of blood and frothy mucus, allayed, and the patient that was so far exhausted as to be unable to walk or stand, restored in four or five weeks to perfect health. In the sub-acute stage of inflammatory diseases which I have attempted to point out, and which is not the less dangerous and troublesome because it is sub-acute, the Blood-root appears to me to be much more certain and safe in its operation than *colchicum* or *digitalis*. It was probably in this form of the disease that it was so successfully employed by Dr. Zollickoffer in inflammatory rheumatism.* He gave it after copious depletion by bleeding and purging.

In phlegmasial diseases of the typhoid or asthenic type, such as cynanche maligna, and pneumonia typhoides, the Blood-root is a medicine of inestimable, if not unequalled, efficacy. For whether it be given as an emetic, or expectorant and sudorific, it has not, as was observed above, the tendency to weaken the powers of the system, but, on the contrary, to invigorate and strengthen them. It may sometimes be advantageously combined with calomel, or calomel and opium. When the Blood-root is taken in sufficient quantity to excite vomiting, it most commonly operates quickly and promptly. I have given it as an emetic with much benefit in paroxysms of asthma. It has been highly recommended in various diseases which I have not mentioned, such as amenorrhœa, hydrothorax and jaundice; and as an escharotic in soft polypi, and other fleshy excrescences, but as I wished to speak confidently of its effects, I have only made such remarks as are justified by my own experience. MEDICINAL PREPARATIONS. It may be administered in substance, in the form of pills, or mixed with syrup or treacle; in infusion, or in tincture. DOSES, gr. x to gr. xii of the powder will most commonly excite vomiting, from gr. iii to gr. v may be given without often producing nausea. ℥ss to ℥j of the infusion prepared by pouring oj of boiling water upon ℥j of the coarsely powdered root; ʒss to ʒj of tincture. The tincture may be made by digesting ℥ij of the root in oj of proof spirit, or in wine. When I have had occasion to prescribe the Blood-root for a considerable length of time to the same patient, I have best secured its effects by frequently changing the preparation. "It is a circumstance which greatly lessens the value of Blood-root," says Dr. Tully, "that its powers are very much impaired by age. The recently dried root possesses the greatest activity, but in the course of a few months, its virtues are diminished, as much as one half, and perhaps more. The same is true of the tincture, and the wine, but the latter retains its efficacy longest. The dose, therefore, must be in some measure regulated by the age of the preparation."—I.]

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* See Philadelphia Journal of Medical and Physical Sciences, No. 12, Page 297.

SAPO. L.E.D. *Soap.*

I. Durus. (*Hispanicus.*) *Hard*, or *Spanish Soap.*

Chemical Composition. Oil 60·94, soda 8·56, water 30·50, the water is partially dissipated by being kept, and the soap therefore becomes lighter. Muriate of Soda is also an essential ingredient[*] of hard soap. Solubility. Water dissolves about one third of its weight of genuine soap, and forms a milky solution; alcohol also dissolves it, and affords a solution nearly transparent, although somewhat gelatinous.[†] Incompatible Substances. 1. All acids and acidulous salts, which combine with the alkali, and develope the oil. 2. Earthy salts, e. g. *Alum; muriate and sulphate of lime; sulphate of magnesia.* 3. Metallic salts. *Nitrate of silver; ammoniated copper; tincture of muriated iron; ammoniated iron; acetate, sub-muriate*, and *oxy-muriate of mercury; sub-acetate of lead*;[‡] *tartarized iron; tartarized antimony; sulphates of zinc, copper and iron.* 4. All astringent vegetables. 5. Hard water. Med. Uses. In large doses it is purgative, in smaller ones, it is decomposed *in transitu*, and its alkali is carried to the kidneys; in this way it may act as a lithonthriptic; or it may produce its effects by correcting any acidity which may prevail in the *primæ viæ*, for the weakest acid is capable of decomposing soap, and of uniting with its alkaline base; a solution of soap in lime water was long regarded as one of the strongest solvents of urinary calculi that could be administered with safety, but the result of such a mixture is an insoluble soap of lime, and a solution of soda; in habitual constipation, and in biliary obstructions, it is frequently prescribed in conjunction with rhubarb, or some bitter; in which cases it can only act as a laxative, or as a chemical agent, in increasing the solubility of the substance with which it is united. It has been also given in solution as an antidote to metallic poisons, and it is often successfully injected as a clyster, in unrelenting and habitual costiveness; as an external application, it is used in the form of liniment, (see *Linimenta.*) Its pharmaceutical value in forming pill-masses has already been considered (*vol. i. p.* 234,) and the following *formulæ* afford examples of such an application, viz. 14, 80, 105, 116, 165. OFFICINAL PREPARATIONS. *Pil. Saponis cum Opio.* (𝔐) L. *Pil. Scillæ comp.* (ʒ𝔐) L. *Pil. Aloet.* (𝔐) E. *Pil. Aloes et Assafœtidæ.* (ʒ) E. *Pil. Aloes cum Zinzib.* (𝔐) D. *Pil. Colocynth. comp.* (𝔐) D. *Emplast. Saponis.* L.E. *Ceratum Saponis.* L. *Liniment. Saponis. comp.* L. *Liniment. Saponis cum Opio.* L.

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[*] In those districts where Soap is generally made from wood ashes, or from Russian or American potass, unless Salt were added in large quantities, it would not have any consistence. As Kelp and common Barilla contain a sufficient quantity of it, no farther addition is required.

[†] Transparent Soap is made by carefully evaporating the alcoholic solution. The solution itself is sold under the name of Shaving Liquid, or "Essence Royale pour faire la Barbe."

[‡] When a solution of soap and sub-acetate of lead are added together, the potass of the former combines with the acetic acid of the latter, and the fat and oxyd of lead are disengaged; the one rising to the surface, while the other is precipitated, and yet notwithstanding this complete decomposition, some surgeons are in the habit of using an application which consists of a drachm of the *Liquor Plumbi Sub-Acetatis*, and two ounces of the *Linimentum Saponis!* We cannot have any hesitation in deciding upon the inefficacy of such a mixture.

II. SAPO MOLLIS. *Soft Soap.*

This differs from *hard soap* chiefly in its consistence, which is never greater than that of hog's lard: it is transparent, yellowish, with small seed-like lumps of tallow diffused through it: the alkali employed for its formation is a ley of potass, instead of that of soda.

SARSAPARILLA. L.E.D.

(Smilax Sarsaparilla. *Radix.*)

Sarsaparilla.

QUALITIES. *Form*, long and slender twigs, covered with a wrinkled brown bark; *Odour*, none; *Taste*, mucilaginous and slightly bitter. CHEMICAL COMPOSITION. Its virtues appear to reside in fecula; it also contains a very large proportion of vegetable albumen. SOLUBILITY. It communicates its active principle most completely to boiling water. (See *Decoct. Sarsaparillæ.*) MED. USES. According to Monardes, it was imported by the Spaniards into Europe in 1549, as a specific remedy for the venereal disease; but it soon fell into disrepute, and so continued until about the middle of the last century, when it was again brought into esteem by Hunter and Fordyce, as a medicine calculated to assist the operation of mercury, as well as to cure those symptoms which may be called the *sequelæ* of a mercurial course. DOSE, of the powdered root ℈j to ʒj, three times a day. In selecting the roots, it will be right to choose such as are plump, not carious, nor too dusty on breaking; but rough, and which easily split longitudinally. Officinal Prep. *Decoctum Sarsaparillæ.* L.E.D. *Decoct. Sarsaparillæ comp:* L.D. *Extractum Sarsaparillæ.* L.

SASSAFRAS. L.E.D.

(Laurus Sassafras. *Lignum*, *Radix*, *et Cortex.*)

The Wood, *Root*, *and Bark of Sassafras.*

Qualities. *Odour*, fragrant; *Taste*, sweet and aromatic. Chemical Composition. The qualities of this plant depend upon an essential oil and resin. Solubility. Its active parts are soluble in water and alcohol. Med. Uses. It is said to be diaphoretic, and diuretic; and has been employed in cases of scurvy, rheumatism, and in various cutaneous affections; it also formerly enjoyed the reputation of being an antisyphilitic remedy. Its powers are very questionable. Officinal Prep. *Oleum Sassafras.* L.E.D. *Decoct. Sarsaparillæ comp.* L.D. *Decoct. Guaiac.* L.E.D. *Aqua Calcis comp.* D.*

SCAMMONIA. L.E.D.

(Convolvulus Scammonia *Gummi-resina.*)

Scammonium. D. *Scammony.*

Qualities. *Form*, blackish-gray cakes; *Taste*, bitter and sub-acrid; *Odour*, heavy and peculiar; when rubbed with water, the surface lathers or *lactifies.* *Specific gravity* 1·235. Chemical Composition. Resin is the principal constituent; 16 parts of good *Aleppo* Scammony yield 11 parts of resin, and 3½ of watery extract. That from *Smyrna* contains not more than half the quantity of resin, but more extractive and gum. Solubility. Water, by trituration, takes up one-fourth, alcohol two-thirds, and proof spirit dissolves all, except the impurities. Incompatible Substances. Neither acids, metallic salts, nor ammonia, produce any change in its solutions, but the fixed alkalies occasion yellow precipitates; and yet they do not appear to be *medicinally* incompatible with it; thus Gaubius, "*Scammoneum acidi commixtio** *reddit inertius; alcali fixum, contra, adjuvat.*" The mineral acids appear to destroy a part of the substance, without in the least altering the rest. The discrepancy which exists in authors respecting the power of this drug, seems to have arisen from its operation being liable to uncertainty, in consequence of peculiar states of the alimentary canal; for instance, where the intestines are lined with an excess of mucus, it passes through without producing any action, but where the natural mucus is deficient, a small dose of scammony may irritate and even inflame the bowels. Med. Uses. It is an efficacious and powerful cathartic, very eligible in worm cases, and in the disordered state of bowels which so commonly occurs in children. Dose, grs. iij to xv, in the form of powders triturated with sulphate of potass, sugar, or almonds; when given alone, it is apt to irritate the fauces; it may also be administered in a solution, effected by triturating it with a strong decoction of liquorice, and straining. (*Form.* 78, 83.) Officinal Prep. *Confect. Scammon.* L.D. *Pulv. Scammon. co.* L.E. *Extract. Colocynth. co.* (ℱ)L. *Pulv. Sennæ co.* (ℱ)L. Adulterations. Two kinds of Scammony are imported into this country, that from *Aleppo*, which is the best; and that from *Smyrna*, which is more compact and ponderous, but less pure: it is commonly mixed with the expressed juice of the *cynanchum monspeliacum;* it is also sophisticated with *flour, sand,* or *ashes;* their presence may be detected by dissolving the sample in proof spirit, when the impurities will sink, and remain undissolved; carbonate of lime is moreover frequently added to Scammony, in which case the sample will effervesce in acids: there is, however, a compound bearing the name of Scammony, to be met with in the market, which is altogether factitious, consisting of jalap, senna, manna, gamboge, and ivory black. Good Scammony ought to be friable, and when wetted with the finger, it should *lactify*, or become milky: and the powder should manifest its characteristic odour, which has been compared to that of old ewe milk cheese.

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* Godfrey's Cordial.—The following receipt for this nostrum was obtained from a wholesale druggist, who makes and sells many hundred dozen bottles in the course of a year. There are, however, several other formulæ for its preparation, but they are not essentially different. Infuse ℥ ix of Sassafras, and of the seeds of Carraway, Coriander, and Anise, of each ℥ j, in six pints of water, simmer the mixture until it is reduced to four pints; then add ℔vj of Treacle, and boil the whole for a few minutes; when it is cold, add f℥iij of the tincture of Opium. The extensive and indiscriminate use of this nostrum in the nursery, is a subject of national opprobrium, and is so considered by foreign writers. See Fodéré, *Medicine Legale*, vol. iv. p. 22.

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* M. Virey says, "On observe que des acides *châtrent*, pour ainsi parler, tout l'energie de la Scammonée."

SCILLÆ RADIX. L.E.D. (Scilla Maritima.)
Squill Root. (Bulb.)

QUALITIES. *Odour*, none; *Taste*, bitter, nauseous, and acrid; when much handled it inflames and ulcerates the skin. By drying, the bulb loses about four-fifths of its weight, and with very little diminution of its powers, provided that too great a heat has not been applied. CHEMICAL COMPOSITION. According to Vogel, gum 6—tannin 24—sugar 6—bitter principle (*Scillitin*, which is white, transparent, and breaks with a resinous fracture,) 35—woody fibre 30. SOLUBILITY. Squill gives out its virtues so perfectly to any of the ordinary menstrua, as to render the form of its exhibition, in that respect, a matter of indifference. INCOMPATIBLE SUBSTANCES. *Alkalies* diminish their acrimony and bitterness, and are probably *medically* inconsistent with their diuretic qualities, but farther experiments are required to decide this question: *vegetable acids* produce no effect upon their sensible qualities, but are said to increase their expectorant power. MED. USES. According to the dose, and circumstances under which it is administered, it proves expectorant, diuretic, emetic, or purgative; as an expectorant, it can never be employed where pulmonary inflammation exists, for in such cases, instead of promoting, it will check any excretion from the lungs; its combination with a diaphoretic will frequently increase its powers, and generally be a measure of judicious caution. See *Form.* 133, 134, 135, 139. For the philosophy of its action, the reader must refer to the classification of Expectorants, vol. i, p. 133. As a diuretic, it seems to act by absorption, and we accordingly find on the authority of Dr. Cullen, that *when the squill operates strongly on the stomach and intestines, its diuretic effects are less likely to happen;* he therefore found that by accompanying it with an opiate, (*Form.* 100) the emetic and purgative operation may be avoided, and the squill be thereby carried more entirely to the kidneys. Experience, moreover, has taught us the value of combining this medicine with some mercurial preparation, by which its diuretic powers are very considerably augmented, (*Form.* 102, 103,106, 107,109, 112, 115,) but we must take care that it does not occasion purging. In the exhibition of squill, it has been often delivered as a rule, to give it to the extent necessary to induce nausea, as affording a test of the medicine being in a state of activity. Dr. Home, in opposition to the opinion of Cullen, maintained that the powers of Squill, as a diuretic, were increased by combining it with bodies capable of promoting its emetic operation: after what has been observed, however, it is unnecessary to dwell upon the mischievous tendency of such a practice. By referring to our tabular arrangement of Diuretics, vol. i. p. 123, the reader will perceive that its action upon the urinary organs is supposed to depend upon its bitter principle (*Scillitin*,) being developed and carried, by the medium of the circulation, to the secreting vessels of the kidneys, which it thus stimulates by actual contact. As an emetic, it has been advised in solution, in cases of hooping cough, but its extreme uncertainty renders it unfit for exhibition, unless as an adjunct to emetic combinations, as in *Form*: 65. *Plenck* makes mention of a child which had convulsions in consequence of taking some Squill. DOSE. Of the dried root gr. j to iv. OFFICINAL PREP. *Acetum Scillæ*, L.E.D. *Pil. Scil. comp.* L.E.D. *Pulv. Scill.* E.D. *Syrup. Scill. maritim.* E. *Tinct. Scill.* L.D.

[SECALE CEREALE. *W. I.* 471. *Clavus. The Spur.*
SECALE CORNUTUM. *Spurred Rye. Ergot.*

CHARACTER AND SENSIBLE PROPERTIES. A parasitic *fungus* growing within the glumes of some one of the *gramina*, most commonly of the *Secale Cereale*. *Colour*, externally violet, (blue or blackish,) internally white; *Form*, cylindrical, tapering at the extremities, occasionally straight, generally curved, with a longitudinal groove both on the concave and convex side; *Dimensions*, from four to twelve lines in length, from two to three in diameter; *Flavour*, at first imperceptible, after some time, disagreeable, nauseating, and subacrid. CHEMICAL PROPERTIES. Pale yellow colouring matter, soluble in alcohol, violet colouring matter, insoluble in alcohol, white oily matter, acid, probably the phosphoric, vegeto-animal matter, yielding ammonia by distillation, and free ammonia. (*Tully.*)* SOLUBILITY. Its active properties are yielded to water and to alcohol, but water is the best menstruum. MEDICAL USE. It is no longer denied in America that this substance possesses the peculiar property of increasing the contractile efforts of the gravid uterus. Hypothetical speculations have yielded to facts, for facts on this subject must be acknowledged, even, though they may not be satisfactorily explained. Many evils have doubtless resulted from the untimely and injudicious use of Ergot, and consequently many and strong prejudices against it were excited for a while. But the uniformity and safety of its operation have been confirmed by so much skill and experience, and the circumstances which indicate and forbid its use so accurately defined, that no valid objection to it can now be offered; and, if it be not in future made subservient to useful purposes, it will be owing to inveterate prejudice, ignorance, or error, rather than to its inertness, or to any injurious properties of the medicine. It is granted that this, like every other article in the materia medica, may sometimes fail to produce its customary effects, but not more frequently than opium, to induce sleep, and as seldom, it is believed, as tartar emetic to excite vomiting; and with regard to its safety, the physician who has not the judgment and discrimination which will enable him to determine when to exhibit it with the prospect of benefit, and without the smallest probability of injury to his patient, would not be less liable to err in the use of the forementioned remedies. The directions for the use of Ergot are simple and explicit, being founded on its unequivocal operative effect in increasing uterine contraction. This being acknowledged, what are the circumstances which forbid the use of it, and what the indications for employing it? In the first place, it is to be remembered that the process of labour is, ordinarily, a natural one, and that so long as there is no interruption nor hazardous deviation in this process, though it proceed ever so slowly, artificial interference is unjustifiable. And, if it be dangerously protracted by any unnatural mechanical impediment, whether it be owing to malconformation of the mother or the child, to attempt to overcome the obstructions by increasing the muscular action of the womb, would in all probability be unavailing, and always highly dangerous and improper. Should the presentation of the child be such as to render it necessary to alter its position, it is well known that uterine relaxation is indispensable to facilitate the operation, therefore the effects of Ergot would in all such cases be injurious. Notwithstanding these restrictions, it will be perceived that there are still many alarming occurrences in the parturient state, where the Ergot may be advantageously used, and where, by exciting the expulsive efforts of the uterus, it may not only supersede in some cases the more hazardous and formidable means of manual assistance, but by arresting profuse hemorrhage, in the periods of pregnancy when such assistance cannot be rendered, may actually preserve the life of the patient. The indications which require the exhibition of this medicine, have been carefully defined, and pointed out by Drs. Stearns, Bigelow, Tully, and many others, all of whom agree in recommending the same general rules of practice. Dr. Stearns, who first called the attention of physicians to the medicinal properties of Ergot, gives the following directions for its exhibition.

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* American Journal of Sciences and the Arts, Vol. II, Page 47.

"The Ergot is indicated, and may be administered,

I. When in lingering labours the child has descended into the pelvis, the parts dilated and relaxed, the pains having ceased, or being too ineffectual to advance the labour, there is danger to be apprehended from delay, by exhaustion of strength and vital energy, from hemorrhage or other alarming symptoms.

II. When the pains are transferred from the uterus to other parts of the body, or to the whole muscular system, producing general puerperal convulsions.

After premising copious bleeding, the Ergot concentrates all these misplaced labour pains upon the uterus, which it soon restores to its appropriate action, and the convulsions immediately cease.

III. In the early stages of pregnancy, when abortion becomes inevitable, accompanied with profuse hemorrhage, and feeble uterine contractions.

IV. When the placenta is retained from a deficiency of contraction.

V. In patients liable to hemorrhage immediately after delivery. In such cases the Ergot may be given as a preventive a few minutes before the termination of the labour.

VI. When hemorrhage or lochial discharges are too profuse immediately after delivery, and the uterus continues dilated and relaxed without any ability to contract."*

I have but little confidence in this substance as an emmenagogue. I have repeatedly prescribed it, but never with success. One case has fallen under my observation, in which it brought on labour pains, and in a few hours abortion, in a healthy female. It was about the third month of her pregnancy. She procured and took the medicine designedly to produce miscarriage. About a year afterward, the Ergot was prescribed to the same female for the purpose of checking menorrhagia. It caused nausea, dizziness, and vertigo, but had no effect in curing the disease. Doses. It may be administered in substance or in decoction; grs. x of the former in powder, or ℥j of the latter prepared by boiling ʒi of the coarsely powdered Ergot, in oss of water. The decoction is the best preparation, and a dose should be repeated every ten or fifteen minutes till its effects are obvious.—I.]

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* New-York Medical and Physical Journal, Vol. I. Page 265.

SENEGÆ RADIX. L.E.D.

(Polygala Senega.) *Radix.*

Seneka Root.

Qualities. *Form*, the dried root is internally white; externally it is covered with a brownish gray, corrugated, transversely cracked cuticle. *Odour*, none. *Taste*, at first sweetish, but afterward hot and pungent, producing a very peculiar tingling sensation in the fauces. Chem. Comp. Its virtues reside in resin. Solubility. Alcohol extracts the whole of its active matter; hot water only partially. Med. Uses. As a stimulant; but it is rarely used. In America it is used against the bite of the rattle-snake. Officinal Prep. *Decoctum Senegæ.* L.E.

[The American physician will perceive from the foregoing remarks of the author, that he has no practical knowledge of the medicinal qualities of the Polygala Senega, and but an imperfect acquaintance with its history and its present reputation in this country. As an antidote "against the bite of the rattle-snake," it is altogether discarded, but as a diuretic, expectorant, emmenagogue, and deobstruent, it is deservedly much celebrated, and is pretty generally and extensively employed throughout the country.

The Senega grows in various parts of North America, but most abundantly in the mountainous sections of the western and southern States. Its medicinal virtues seem to reside principally in the bark of the root. Its strength is not much impaired by age. It is more completely soluble in alcohol than in water, but as economy is no object in its prescription, the decoction is the preparation most commonly used. To this I know not that any other objection can be offered, than its pungent and nauseating taste, which is the more disagreeable, from the increasing and long continued impression which remains in the fauces, after the dose is swallowed. It has been supposed by some that its effects as an expectorant, were owing altogether to the impression thus produced by swallowing it; but this opinion is contradicted by the fact, that the powdered root obviously promotes expectoration when administered in the form of pills so as to cause no sensible irritation.

I have mentioned several indications for the employment of

Senega, but it appears to me to be pre-eminently useful as a diuretic. If given under suitable circumstances, there is not probably a more infallible and powerful agent belonging to this class of medicines. Dropsical effusions, particularly ascites, occurring in phlegmatic habits, and unattended with febrile excitement, may generally, if not always, be evacuated through the kidneys by the use of it, even where the disease has so far advanced that it cannot be permanently cured. But it is proper to observe that, to ensure its diuretic effects, it is frequently necessary to administer small doses of calomel, or the blue pill, a few days before giving the Senega. Its activity is also very much increased, and its unpleasant effects upon the stomach and bowels often prevented, by combining with it other substances.* Those who have never made trial of this article, as here recommended, may be ready to attribute the effects ascribed to it, to the auxiliaries above mentioned; but I am confident that without the Senega they will not produce them, and that experience and observation will confirm what is here said of it.

As a stimulating expectorant, the Senega is a medicine of unequivocal efficacy; but it is improper that it should be exhibited in the acute stage of inflammatory diseases. Although it has doubtless sometimes given relief in the early stage of croup, by operating as an emetic, it cannot be regarded as a suitable or safe remedy in that period of the complaint; but, in a later stage of cynanchial diseases, of pneumonia, and particularly of pneumonia typhoides, after febrile excitement has been subdued by depletion, and the local inflammation assumed a passive character, the Senega has a powerful effect in promoting secretion, and dissipating congestion, and is unquestionably a very suitable and efficacious remedy.

I have never prescribed the Senega as an emmenagogue, but the testimony of Dr. Hartshorne, who first recommended it, and of professor Chapman, and others, is sufficient to prove that it has been successfully exhibited, and to commend it to further trial. Dr. Chapman pronounces it "one of the most active, certain, and valuable of the emmenagogues." He administers it in doses of ℥iv of the decoction during the day, from the time the menstrual effort is expected to be made, till the discharge is actually induced, increasing the dose as far as the stomach will allow. He suspends the use of it in the intervals of the menstrual periods, and prepares the system for its operation, by obviating excessive excitement and debility by other remedies, during its exhibition. He thinks it not only particularly useful, but specific in its operation, in those cases where the decidua exists, and questions how its effects can be otherwise explained.* Do they not obviously result from its deobstruent or alterative properties? There is probably no article belonging to the vegetable kingdom whose action is so analagous to that of calomel as this. It increases secretion, changes diseased action, and not unfrequently produces salivation, and, as has been repeated above, the same measures preparatory to its successful operation, are necessary, that are adopted to secure the alterative effects of mercury.

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* See the Decoction of Squills of the American Pharmacopœia.

If the Senega is given in large doses, it operates quickly as an emetic; and in the protracted stage of croup, when it is desirable to relieve the patient of large collections of mucus, the decoction may be advantageously exhibited till it excites vomiting. It is sometimes administered in the form of powder, but the decoction is the best preparation. The doses are from ℈j to ʒss of the powder for an emetic—gr. x will not often offend the stomach; ℥ss of the decoction, made by boiling ℥j of the roots in oj of water, may be given every two hours.—I.]

SENNÆ FOLIA. L.E.D. (Cassia Senna.)

Senna Leaves.

QUALITIES. *Odour*, faint and sickly; *Taste*, slightly bitter, sweetish, and nauseous. CHEMICAL COMPOSITION. Extractive, resin, mucilage, and saline matter; it contains within itself a purgative principle and a bitter element; and although the latter is *per se* inert, yet in combination, its presence aids and exalts the efficacy of the former M. M. Lassaigne, and Fenuelle, have lately announced the fact of their having procured the purgative principle of Senna in a separate form, and to which they have given the name of *Cathartine*. It is said to be an uncrystallizable substance, of a reddish-yellow colour, and of a particular smell, and bitter nauseous taste, soluble in alcohol and water, in all proportions; but farther experiments are required upon this subject. SOLUBILITY. Both water and spirit extract the virtues of Senna; to water and proof spirit the leaves communicate a brownish colour, more or less deep according to the proportions employed; to rectified spirit they impart a fine green colour. MEDICAL

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* Elements of Therapeutics and Materia Medica, Vol. II. Page 8.

Uses. See *Infus: Sennæ*. Officinal Prep. *Confectio Sennæ*. L.E.D. *Extract: Cassia Sennæ*. E. *Infus: Sennæ*. L.D. *Infus: Tamarind: cum Senna*. E.D. *Pulv. Sennæ comp:* L. *Tinct: Sennæ*. L.D. *Tinct: Sennæ comp:* E. *Syrup: Sennæ*. L.D. Adulterations. The leaves of Senna are imported from Alexandria in a state of adulteration, being mixed by the merchants of Cairo with the leaves of *Cynanchum Oleafolium*, (Arguel) and with those of *Colutea Arborescens;* the former are distinguished by their greater length as well as by their structure, which differs from the leaves of Senna in having a straight side, and being regular at their base, and in not displaying any lateral nerves on the under disk; the latter are so different from Senna leaves, that there is no difficulty in at once recognizing them. The *Tripoli Senna* contains a much larger proportion of *Cynanchum*, and of the other adulterations; as a general rule, those leaves which appear bright, fresh, free from stalks and spots, that are well and strongly scented, smooth and soft to the touch, thoroughly dry, sharp pointed, bitterish, and somewhat nauseous, are to be preferred.

SERPENTARIÆ RADIX. L.D.

(Aristolochia Serpentaria, *Radix.*)

Serpentaria Root. Virginian Snake root, or Birthwort.

Qualities. *Odour*, of the dried root, aromatic, and somewhat resembling that of Valerian; *Taste.* pungent and warm, with a degree of bitterness. Chemical Composition. Resin and an essential oil constitute its active ingredients. Solubility. Its virtues are extracted by water, as well as by alcohol. Med. Uses. It has been regarded as serviceable in cases that require the combined powers of a diaphoretic and tonic, as in some of the stages of typhus and other low fevers; it has also been found to exalt the febrifuge powers of the bark in cases of protracted intermittents. It is likewise valued on account of its efficacy in certain cases of dyspepsia, attended with a dry skin. Its stimulating properties will of course prevent its application in the inflammatory diathesis. Forms of Exhibition. In substance, or in an infusion, made by macerating ʒiv of the bruised root in f℥xij of boiling water in a covered vessel for two hours, and straining. Decoction will necessarily dissipate its essential oil, and impair its powers; whenever therefore it is directed in combinations which require this process, it should not be added until after the other ingredients have been boiled, as illustrated by *Form.* 40. Dose of the powdered root ℈j to ʒss or more; of the infusion f℥j—f℥ij. Officinal Prep. *Tinct. Serpentariæ.* L.E.D.* *Tinct. Cinchonæ comp.* L.D. *Electuarium Opiatum.* E.

The roots of the *Collinsonia præcox* are frequently found mixed with those of Serpentaria in the market.†

SIMAROUBÆ CORTEX. L.E.D.

(Quassia Simarouba, *Cortex.*)

Simarouba Bark.

Qualities. *Form,* long pieces a few inches in breadth, and folded lengthwise; fibrous, rough, and scaly; and, when fresh, of a full yellow colour in the inside. *Odour,* none; *Taste,* bitter. Chemical Composition. Its virtues are principally connected with extractive matter; it does not contain any tannin, or gallic acid. Solubility. Alcohol and water take up all its active matter. Med. Uses. It has been considered tonic, and has been used with advantage as such in intermittent fevers. To *Dr. Wright* we are principally indebted for a knowledge of its powers. It has been much commended in the latter stages of dysentery, after the fever has abated, and the tenesmus continues with a sinking pulse. Dose, ℈i to ʒss, but it is more conveniently given in the form of an infusion, which see. Officinal Prep. *Infus. Simaroubæ.* L.

The Dublin College has admitted the wood of this tree into their materia medica, but it is perfectly inert.

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* It enters into the composition of *Stoughton's Elixir,* for which see Gentianæ Radix.

† The Serpentaria is an article of great value when it has been recently gathered, properly cured, and carefully preserved, but there are few medicines of which so large a proportion are sold of inferior quality as this. The teas of China do not suffer more by exposure to moisture or by age than the snake root; notwithstanding, if it has once been purchased by the druggist it must be sold, and what cannot be palmed upon the physician of the metropolis, must be sent into the interior of the country or made into tinctures. It is supposed by many physicians that the serpentaria gathered in the northern States is superior to that brought from the south; but the difference in the quality is probably owing to other causes than the locality of its growth. Here, it is gathered in small quantities, and used when fresh; whereas it is made an article of merchandise in the south; is collected and cured carelessly; is sent to the north in large quantities; is frequently exposed to the atmosphere by packing and repacking, and often stored for many years; sometimes in a damp cellar, and sometimes in the garret, before it comes to the hands of the physician. From these causes a great portion of it is rendered nearly inert.

The *Medicinal Properties* of this article are too well known in this country to require that any thing should be added to what is said of them by the author.—I.

SINAPIS SEMINA.

(*Sinapis Nigra.* L. *Alba.* E.D.)

Mustard Seeds.

Chemical Composition. Fecula, mucilage, an acrid volatile oil on which their virtues depend, and which on standing deposites a quantity of sulphur, a bland fixed oil, which considerably obtunds the acrimony of the former constituent;* and an ammoniacal salt. Solubility. Unbruised mustard seeds, when macerated in boiling water, yield only an insipid mucilage, which, like that of linseed, resides in the skin; but when bruised, water takes up all the active matter, although it is scarcely imparted to alcohol. Med. Uses. It is a beneficial stimulant in dyspepsia, chlorosis, and paralysis; for which purpose, a tea-spoonful of the bruised seeds may be administered; or a *whey* may be made, by boiling a table-spoonful of the bruised seeds in oj of milk, and straining; of which a fourth part may be taken three times a day, (see *Form.* 46,) or it may be given in infusion, (*Form.* 45.) The farina made into a paste with crumbs of bread and vinegar, affords one of the most powerful external stimulants which we can apply, and is technically termed a *Sinapism;* it produces intense pain, and excites an inflammation entering much more into the true skin than that which is excited by the Lyttæ; it is therefore worthy attention in all internal inflammations where bleeding is limited: if necessary it may be quickened by the addition of oil of turpentine. If a table-spoonful of powdered mustard be added to oj of tepid water, it operates briskly as an emetic. Officinal Prep. *Cataplasm. Sinap,* L.D. *Emplast. Meloes com.* ([illegible]) E.† *Infusum Armoraciæ comp.* L. ([illegible]) Adulterations. Fine powder, or flower of mustard, as it occurs in commerce, contains only one-sixth part of genuine mustard, the remainder consists of flour, coloured by turmeric, and made pungent by the addition of powdered capsicum.

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* It is for this reason that the cake left after expression is so much more pungent than the seeds, for the fixed oil can be easily separated by pressure.

† Whitehead's Essence of Mustard.—This consists of *oil of turpenpentine, camphor,* and a portion of *spirit of rosemary;* to which is added a small quantity of *flour of mustard.*

Whitehead's Essence of Mustard Pills.—Balsam of Tolu, with resin!

Ready Made Mustard.—This is made up with currant wine, and sugar; formerly *Must,* or grape juice, was employed for this purpose, whence the name *Must*ard.

SODA TARTARIZATA. L. TARTRAS SODÆ ET POTASSÆ. E. TARTARUS SODÆ ET KALI. D. olim *Sal de Seignette*. *Sal Rupellensis*, or *Rochelle Salt*.

QUALITIES. *Form*, a right prism, with rhombic terminations, very slightly efflorescent. CHEMICAL COMPOSITION. It is a triple salt, formed by neutralizing the excess of acid in super-tartrate of potass, with soda. SOLUBILITY. It is soluble in five parts of water at 50°. MED. USES. Similar to those of *Potassæ Tartras*. See *Form*. 77, and 86, the latter of which presents a very grateful and efficacious purgative.

SODÆ CARBONAS. L.E. *Carbonate of Soda*.

This salt, when properly prepared, is a *bi-carbonate* of soda; its taste is very slightly alkaline, and it is much less soluble in water than the sub-carbonate; its chemical habitudes, as connected with its medicinal applications, are similar to those of the *carbonate of potass*, which see. MED. USES. As it is less nauseous, so it is more eligible than the *sub*-carbonate; in other respects, its effects are the same, *vid*. *Sodæ Sub-carbonas*. DOSE, grs. x to ʒss.*

SODÆ MURIAS. L.E.

SAL COMMUNE, Murias Sodæ. D.

Muriate of Soda. *Common Salt*.

QUALITIES. *Form*, that of regular cubes, which do not deliquesce unless contaminated with muriate of magnesia.†

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* SODAIC POWDERS.—Contained in two distinct papers, one of which is blue, the other white; that in the former consists of ʒss of the *carbonate of soda*, that in the latter of grs. xxv of *tartaric acid*. These powders require half a pint of water. It is very evident that a solution of these powders is by no means similar to "*Soda Water*," which it is intended to emulate; for in this latter preparation, the soda is in combination only with carbonic acid; whereas the solution of the "*Sodaic Powders*" is that of a neutral salt, with a portion of fixed air diffused through it.

PATENT SEIDLITZ POWDERS.—These consist of two different powders; the one, contained in a white paper, consists of ʒij of *Tartarised Soda*, and ℈ij of *Carbonate of Soda;* that in the blue paper, of grs. xxxv of tartaric acid. The contents of the white paper are to be dissolved in half a pint of spring water, to which those of the blue paper are to be added; the draught is to be taken in a state of effervescence. The acid being in excess renders it more grateful, and no less efficacious, as a purgative.

† Our English Salt is generally thus contaminated; for which reason it is unfit for the curing of several kinds of fish; this will not appear strange, says

Chemical Composition. It consists according to Berzelius, of 46·55 of muriatic acid, and 53·44 of soda; according to the new theory, however, this salt must be considered as a true *muriate of soda*, only while it remains in aqueous solution; for when it is reduced to dryness, the muriatic acid and the soda become both decomposed, and the hydrogen of the former uniting with the oxygen of the latter, they pass off in the form of water, while the chlorine of the muriatic acid unites with the metallic base of the soda, to form *chloride of sodium*, in the proportion of 22 sodium, to 33·5 chlorine. Late researches have also detected both in rock and in other salt, the presence of *muriate of potass*, and *muriate of magnesia.*[*] **Solubility.** It is equally soluble in cold and in hot water, one part of the salt requiring rather more than 2½ parts. **Med. Uses.** The effects of salt upon the animal and vegetable kingdoms, are striking and important,[†] and have furnished objects of the most interesting inquiry to the physiologist, the chemist, the physician, and the agriculturist; it appears to be a natural stimulant to the digestive organs; and that carnivorous animals are instinctively led to immense distances in pursuit of it; the reader is referred to "*Parkes on the repeal of the Salt Laws*," and to an interesting work by my late lamented friend, Sir Thomas Bernard, entitled, "*Case of the Salt Duties, with Proofs and Illustrations.*" Salt, when taken in moderate quantities, promotes,[‡] while in excessive ones, it prevents digestion; it is therefore tonic and anthelmintic, correcting that disordered state of the bowels which favours the propagation of worms. In Ireland, where, from the bad quality of the food, the lower classes are greatly infested with worms,[||]

Mr. Parkes, when it is considered that merely its own weight of water is all that is necessary for the complete solution of *muriate of magnesia;* a circumstance which renders it impossible to preserve such salt for any length of time, in a dry state. This muriate, however, might be separated from common salt, on a large scale, for one shilling per cwt. By exposing the salt to a gentle heat in reverberatory furnaces, the muriatic acid of the magnesian muriate will fly off, and the magnesia (on a subsequent solution of the salt) will be precipitated. It is well known that *muriate* of magnesia begins to part with its acid at a temperature a little higher than that of boiling water.

[*] The annual quantity of salt raised from the Salt Mines and Springs in Europe, is estimated at from 25 to 30 millions of cwt.

[†] The respect paid to *Salt* among Eastern nations is very remarkable, and may be traced to the highest antiquity. Homer gives to it the epithet of [illegible], *Il.* ix. *p.* 214.

[‡] The celebrated Indian Tonic for Dyspepsia and Gout, called *Bit laban*, is prepared by fusing together *muriate of soda* and some other ingredients. See *Dr. Fleming's Catalogue of Indian Medicinal plants and drugs*, *p.* 54, 55.

[||] I have myself witnessed the bad effects of a diet of unsalted fish; and in my examination before a Committee of the House of Commons in 1818, apa draught of salt and water is a popular and efficacious anthelmintic. *Form.* 162, is a prescription by Rush, who says that in this manner he has administered many pounds of common salt with great success in worm cases. In the first volume of Medical Transactions we shall find an interesting account of a cure of this disease by salt, after the failure of other remedies; I beg also to refer the practitioner to another case illustrative of its anthelmintic powers, published by Mr. Marshall, (*London Medical and Physical Journal*, vol. xxxix. No. 231,) which is that of a lady who had a natural antipathy to salt, and was in consequence most dreadfully infested with worms during the whole of her life. In very large doses *Salt* proves purgative; it is also absorbed, and carried to the kidneys, but it undergoes no decomposition *in transitu*, nor does it appear to possess any considerable powers as a diuretic; its solution in tepid water, in proportion of ℥ss—ʒj in oj of water, forms the common domestic enema. Dose, when intended to act as a cathartic, from ℥ss to ʒj very largely diluted; when to answer the other intentions, from grs. x to ʒj.

pointed "for the purpose of inquiring into the laws respecting the Salt Duties," I stated the great injury which the poorer classes in many districts sustained in their health, from an inability to procure this essential article. Lord Somerville (in his address to the Board of Agriculture) gave an interesting account of the effects of a punishment which formerly existed in Holland. "The ancient laws of the country, ordained men to be kept on bread alone, UNMIXED WITH SALT, as the SEVEREST punishment that could be inflicted upon them in their moist climate; the effect was horrible: these wretched criminals are said to have been DEVOURED BY WORMS, engendered in their own stomachs."

SALT was an object of taxation at a very early period in this country; Ancus Martius, 640 years before our era '*Salinarum Vectigal* instituit.' This tribute was continued on the Britons when our Isle was possessed by the Romans, who worked the Droitwich Mines, and who made salt part of their soldiers *Salarium*, or salary. Hence the custom at the Eton Montem of asking for salt.

The great advantage which must accrue to this nation in its fisheries, agriculture, manufactures, and commerce, from a late remission of the odious and impolitic tax upon salt, are incalculable. The government of France appears to have been as impolitic with regard to this tax as the English. Buonaparte abolished the collection of turnpike dues; and imposed a tax on salt, payable at the Salt-pans, in its stead. It is not perhaps generally known, that by the aid of this tax he was enabled to complete the grand entrance into Italy, over the Simplon; so that it may be fairly observed, that if HANNIBAL was enabled to cross the Alps by the aid of VINEGAR—BUONAPARTE, by the assistance of SALT, succeeded in constructing a public road over the same mountains.

SODÆ SUB-BORAS. L.D. BORAS SODÆ. E.

Borax.

QUALITIES. *Form*, irregular hexahedral prisms, slightly efflorescent. *Taste*, alkaline and styptic; when heated it loses its water of crystallization, and becomes a porous friable mass (*calcined borax.*) CHEMICAL COMPOSITION. Boracic acid, 34—soda, 17—water, 49. SOLUBILITY. It is soluble in 20 parts of water at 60°, and in 6 parts at 212°. INCOMPATIBLE SUBSTANCES. It is decomposed by *acids*; *potass*; by the *sulphates* and *muriates* of the *earths*, and by those of *ammonia*. MED. USES. It is only applied in the form of powder, mixed with 8 or 10 parts of honey, as a detergent linctus in aphthæ, &c. The Chinese employ it in inflammatory sore throats; for which purpose they first reduce it to an extremely fine powder, and then blow it through a reed upon the inflamed surface. OFF. PREP. *Mel Boracis*. L. ADULTERATIONS. *Alum*, and *fused muriate of soda*, are substances with which it is sometimes sophisticated; to discover which dissolve it in distilled water, and after saturating the excess of the base with nitric acid, assay the solution with nitrate of barytes and nitrate of silver.

SODÆ SUB-CARBONAS. L.E.D.

Sub-carbonate of Soda.

QUALITIES. *Form*, octohedrons, truncated at the summits of the pyramids; it effloresces when exposed to the air, and at 150° Fah. undergoes watery fusion, its crystals containing as much as seven proportionals of water; *Taste*, mild, but alkalescent. CHEMICAL COMPOSITION. Soda 29·5—carbonic acid 20·7. SOLUBILITY. It is soluble in two parts of water at 60°, and in considerably less than its weight of boiling water; it is insoluble in alcohol. INCOMPATIBLE SUBSTANCES are enumerated under *Potassæ Carbonas*. MEDICAL USES, are similar to those of the sub-carbonate of potass, but it is preferable to it for internal use, as being more mild and less nauseous; and moreover Fourcroy states it as his opinion that soda is more eligible for medicinal purposes than potass, on account of its analogy with animal substances, which always contain it, while on the contrary, no portion of potass is found in them. Are then the absorbents more disposed to take up soda than potass? The results of experience do not appear to sanction such a conclusion.

Forms of Exhibition. It may be administered in solution, in an electuary, or in pills; when exhibited in the latter form, it must be previously deprived of its water of crystallization. (*Sodæ Sub-carbonas exsiccata.* L.) or the pills will fall into powder as they dry; unless where the water of crystallization is essential to the formation of the pill, as to that of *Pil. Ferri comp.* Dose, gr. x to ʒj, twice or thrice a day. See *Form.* 28, 143, 144.

SODÆ SULPHAS. L.E.D.

Natron Vitriolatum, P.L. 1787. *Sal Catharticus Glauberi.* P.L. 1745.

Qualities. *Form*, transparent prismatic crystals, which effloresce; when exposed to heat, they undergo watery fusion, that is, they melt in their own water of crystallization. *Taste*, saline and bitter. Chemical Composition. Sulphuric acid 24·64,—soda 19·36—water 56. Solubility. f℥j of water at 60° dissolves ʒiiiss; in boiling water it is considerably more soluble; it is quite insoluble in alcohol. Incompatible Substances. The same as those which decompose *sulphate of magnesia.* Medical Uses. A common and useful purgative; its nauseous taste may be in a great degree disguised by the addition of a small quantity of lemon juice, or *cream of tartar.* Dose, ℥ss to ℥ij. In an effloresced state it is just equal in efficacy to double the weight of that which is in a crystalline form. It is rendered more active by being combined with other purgative salts, especially with sulphate of magnesia, and the compound is more soluble and less nauseous; (*Form.* 69, 72.) A portion of triple salt, a *magnesio-sulphate of soda*, probably results from the combination, a salt which may be frequently detected in parcels of sulphate of magnesia, and may be known by its crystals, which are regular rhomboids; it is also contained, according to Dr. Murray, in the brine or *mother liquor* of sea water; and it constitutes the whole of that salt which was formerly sold under the name of "*Lymington Glauber's Salts.*"*

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* Cheltenham Salts.—A factitious compound has been long vended, as a popular purgative, under this name; it is formed by triturating together the following salts. *Sulphate of Soda*, grs. 120. *Sulphate of Magnesia*, grs. 66. *Muriate of Soda*, grs. 10. *Sulphate of Iron*, gr. 1-2. As a purgative it is very efficacious, and superior probably to that which is actually obtained by the evaporation of the Cheltenham water itself; for, notwithstanding the high pretensions with which this latter salt has been publicly announced, it will be found to be little else than common *Glauber's Salt.* This fact has been con-

SPARTIUM. L.E. (Spartii *Cacumina*. L.
Genista. D. *Summitates*. E.)

The tops of Broom.

Qualities. When bruised they yield an unpleasant *odour*, and a nauseous bitter *taste*. Solubility. Water and alcohol alike extract their active matter. Med. Uses. They certainly act as a powerful diuretic, and even prove so to animals that browse upon them. I have frequently exhibited them in the Westminster Hospital, with very great success, in the form of decoction. By referring to our classification of diuretics, vol. i. p. 123, it will be seen that the *Broom* is placed under the second division of the first class; for analogy sanctions the theory, that the bitter element is separated by the powers of digestion, and carried to the kidneys by the medium of the circulation. (See *Form.* 113.) The ashes of this plant were extolled by Sydenham as a powerful diuretic, but the chemist has shown that it is merely a fixed alkaline salt. Officinal Prep. *Extractum Cacuminum Genistæ.* D.

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firmed by the experiments of Mr. Richard Phillips, (*Annals of Philosophy*, No. lxi,) who observes, that the "Real Cheltenham Salts contain no *chalybeate property*," but are merely sulphate of soda, mixed with a minute quantity of soda, and a very small portion of common salt. It could not be imagined that the salt should contain oxide of iron even in a state of mixture, much less in combination, for carbonate of iron is readily decomposed by ebullition, and the oxide of iron is precipitated before the salt can be crystallized. A preparation, under the name of *Thomson's* Cheltenham Salts, is accordingly manufactured in London, by evaporating a solution consisting of sulphate of soda and sub-carbonate of soda.

"Efflorescence of real Cheltenham Salts." The preceding salt deprived of its water of crystallization.

"Efflorescence of real Magnesian Cheltenham Salts," made from the Waters of the Chalybeate Magnesian Spa. This is asserted to be a *sub-sulphate* from nature, which combines both a *pure* and a *sub-sulphated* magnesia in its composition; "but," says Mr. Phillips, "neither nature nor art has ever produced such a combination; in truth, it consists of *Epsom Salt*, with small portions of magnesia, and muriate of magnesia, or muriate of soda.

Murio-Sulphate of Magnesia and Iron. The preparation thus named by Mr. Thomson, was found by Mr. Phillips to consist of Epsom Salt, deprived of part of its water of crystallization, and discoloured by a little rust of iron, and containing a small portion of muriate of magnesia.

Thus it appears, that not one of these preparations is similar to the water which is drank at the Spa; in order to remedy this difficulty, Mr. Thomson prepared the "Original Combined Cheltenham Salts," by evaporating the waters to dryness: but a very small share of chemical penetration is required to satisfy us that no process of this description can remedy the defect described, for as Mr. Phillips has observed, the chalybeate properties of the water *must* be essentially altered by such an operation.

[SPIGELIA MARILANDICA.

W. I. 825. *Bw. I.* 142. *Bn. II.* 75. *Planta.*

Carolina Pink. The whole Plant.

Specific Character. Stem four-sided; leaves all opposite; grows to the height of from one to two feet; root perennial, composed of many slender fibrous branches, which, when fresh, are of a yellowish colour. An indigenous American plant, growing abundantly in the southern States, but is seldom found wild north of Virginia. Solubility. Water is its proper menstruum. Chemical Composition. Extractive matter, gallic acid, and, in the leaves and stalks, a large proportion of mucus. Medical Properties. Narcotic, vermifuge laxative, and febrifuge.* However deserving the Spigelia of the reputation it sustains as a vermifuge, this appears to me to be one of its minor qualities, and that its full value is unknown to those who consider it useful only to destroy worms.

All vegetable narcotics, pungent odoriferous substances, bitters, cathartics, to which may be added a numerous class of mechanical agents, may be regarded as anthelmintics. It will be perceived, by a moment's reflection, that most of the substances which have been arranged under this head, possess some one or all of the foregoing qualities; and furthermore, that the merits and reputation of each article has been proportionate to the number and intensity of these qualities united in it. It would be easy to show that it is almost always by their separate or combined operation that intestinal worms are destroyed or expelled. A very brief illustration only can be admitted here. The greater part of cathartic medicines are no further vermifuge, than as they operate mechanically upon the surface and contents of the alimentary canal; such are calomel and the neutral salts. A more successful class of vermifuge cathartics is that which is composed of more drastic substances, and which have the additional quality of bitterness: to this belong aloes and scammony. A still more efficient class is made up of those that poison or stupify worms by their narcotic and intoxicating qualities, and by their cathartic effects expel them. One of the most useful of this kind is the Spigelia Marilandica. There are also some articles in which are embraced three of the foregoing principles, and which are the most sure in their operation of any belonging to the class of anthelmintic remedies. It will be sufficient to mention the Ol. Terebinth. In addition to its intoxicating and cathartic effects, it has a very pungent and disagreeable odour.

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* Dr. Barton says "the spigelia is powerfully cathartic." I have observed it to be only mildly so.—I.

Two practical inferences are obviously deduced from this view of the subject, the correctness of which, it is believed, experience will confirm. 1st. It may be determined, *a priori*, from the sensible and known medicinal properties of a medicine, whether or not it be vermifuge. 2d. A more infallible anthelmintic may be prepared by artificial combination than is known to exist in nature. The dominant medicinal quality of the Spigelia is narcotic, it is also mildly cathartic, and from these principles result its efficacy as an anthelmintic and a febrifuge. Its efficacy will perhaps ever be doubted by many, in this section of the country, from the difficulty there is in procuring and preserving it of good quality. By exposure to air and moisture, it soon becomes inert. The fresh root is the most active part of the plant, but it seems to lose its virtues by keeping, quicker than the stalks and leaves, so that much of that found in market is altogether useless. The recent plant may be readily known, by the bright pea-green colour of the leaves, the yellowish appearance of the roots, and the apparent freshness of both. When exhibited in such condition, and in full doses, its effects are pretty generally narcotic,* partaking of the character of those produced by *Digitalis* and of *Datura Stramonium*. Its operation is more uniform and mild than that of foxglove, and is rarely attended with the alarming symptoms of prostration, which sometimes so suddenly and unexpectedly result from it, yet its effects are similar to it in lessening morbid irritability of the heart and arteries, and quieting general nervous irritation. Like the Stramonium, it causes vertigo, dilatation of the pupils, and sometimes, when taken in large quantities, delirium or intoxication,† but still its narcotic properties are not so energetic as to cause such symptoms, unless it be taken when fresh and in unnecessarily and immoderately large doses. The Pink root has probably had the reputation of destroying worms very frequently, in cases where they did not exist, for its efficacy is never more conspicuous than in abating the violence, and sometimes in altogether subduing, what is popularly denominated "worm fever," a fever peculiar to children, and characterized by a very rapid pulse, dry hot skin, circumscribed flush on the cheeks, red lips, a peculiar mottled or speckled appearance of the tongue, owing to its being but partially covered by the dingy white slimy scurf upon it, constipated and distended bowels, with pungent heat externally, and excessive nervous irritability. This disease appears to be seated in the mucous membrane of the alimentary canal, and although it may arise from, or be connected with worms it probably originates more frequently from other sources of irritation; in either case, the Spigelia, combined if necessary with some more actively cathartic medicine, is perhaps the best of all remedies for the relief of this species of fever.

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* The narcotic influence of the Pink root has often been ascribed to a small vine, (species of the Glycine) that is found mixed with it. This vine possesses no active medicinal property, as I demonstrated by preparing and drinking a strong infusion of it, and also by eating freely of it without experiencing any sensible effects.

† See Eberle's Materia Medica and Therapeutics, Vol. I. Page 200.

In making a chemical analysis of the Spigelia, some years ago, I was forcibly struck with the large proportion of mucus which entered into the composition of the stalks and leaves, and as I then entertained a high opinion of the febrifuge virtues of the plant, I was led to inquire whether an infusion of the leaves, taken into the stomach, or by injections, might not be serviceable in dysentery. I have since repeatedly prescribed it in that disease, but in most cases it was when the patients were using other remedies at the same time, so that my observation has not been sufficiently extensive to enable me to speak confidently of its effects. It is worthy of further trial. Medicinal Preparations, and Doses. The powdered roots and leaves, from gr. x. to ℈j. every two hours. The infusion prepared by steeping ʒj. of the roots, or ʒij. of the leaves and stalks two hours in oj. of boiling water; *Dose* ʒij to ℥iv. according to the age of the patient, frequently repeated. The infusion is much the best preparation. To secure the anthelmintic effects of this article, it is best, after exhibiting it pretty freely, to follow it with an active dose of calomel, or calomel and rhubarb.—I.

SPIRÆA TOMENTOSA.

W. II. 1056. *Planta.*

Hard Hack. Steeple Bush. The whole Plant.

Specific Character. Leaves lanceolate, unequally serrate, downy beneath; racemes in a crowded sub-panicled spike. An indigenous hardy perennial plant. Grows plentifully in most parts of the United States, arising in many thickly set branches from the same root. Height, from three to four feet. Flowers in July and August, blossoms, deep red or purple. Sensible Properties. The stalks are externally of a purple colour, thinly covered with down, the leaves are deep green on the upper side, brownish, veined, and tomentose underneath; *Taste*, of every part of the plant pleasantly bitter and powerfully astringent. Solubility. Its virtues are all imbibed by water. Chemical Composition. A large proportion of tannin, bitter extractive, and gallic acid. History. It appears to have been first used in medicine by the Mohegan Indians, and subsequently to have become a popular domestic remedy among the whites. It was introduced to professional notice by Dr. Mason F. Cogswell of Hartford, Connecticut, about the year 1810, since which time it has been much used and highly valued by many respectable physicians in the counties of Hartford and New-Haven. About three years ago it was made the subject of an inaugural thesis by my friend and late pupil, Dr. Elijah Mead, by whom it was carefully analyzed, and its medicinal properties accurately investigated. Medical Use. The *Spiræa tomentosa* is tonic and actively astringent. It was first employed, by Dr. Cogswell, in diarrhœa and cholera infantum, in which, he says, he was better pleased with its effects than any remedy he had ever used. Professor Ives, of New-Haven, speaks of it with equal confidence, particularly in the treatment of diarrhœa originating in warm climates. Dr. Tully also recommends it highly as a remedy in chronic diarrhœa of seamen in tropical climates, and in the secondary stages of diarrhœa and dysentery of our own climate. He remarks that he is decidedly of the opinion that its efficacy is greater, in comparison of other articles of the same class, than the intensity of its astringency would lead us to suppose. This fact may be explained from its being more powerfully *tonic* than any other astringent of equal activity. The gentlemen above mentioned, all testify to its efficacy in various other diseases, in which the use of astringents are indicated, and for which they gave it combined with opium, with ipecac. or unmixed, as the condition of the disease seemed to require. For about four years I have employed the extract of spiræa, more frequently, perhaps, than any other vegetable astringent, and I have good reason to be satisfied with its effects. I do not think it so powerfully astringent as Gum Kino, but it is a better tonic, and is therefore preferable to it in the treatment of chronic fluxes connected with debility.

When given in moderate doses it is less liable, than almost any other article, to cause sickness of stomach. It is a convenient and efficient adjuvant to other astringent remedies, such as opium, and super-acetate of lead; and in diarrhœa accompanied with febrile excitement and dryness of the skin, it forms a useful combination with ipecac. In diseases accompanied with much fever, however, it should not be administered till the inflammatory or febrile symptoms have so far subsided as not to be aggravated by mild tonics. As respects the comparative virtues of this article, Dr. Mead remarks, "the medicines already in general use, possessing properties most analogous to the Spiræa, are Kino and Catechu; but the Spiræa must be regarded in many respects equal, if not superior, to either of them. It can be procured at less expense; an equal quantity of the extract possesses more virtue as an astringent; all its virtues are soluble in water; it is equally pleasant to the taste; it never disagrees with the stomach; and what is of still greater importance, it may be always obtained free from adulteration. Whereas, of the catechu, it was justly said by Dr. Cullen, 'We never get it pure, and this should lead us to endeavour to find for it a substitute of our own growth.'"* I have remarked, that I did not think the Spiræa so powerfully astringent as Kino, but that its superiority in restraining debilitating fluxes was probably owing to its greater tonic effects. Another medicine, the *Cornus circinata*, which I have examined since the publication of Dr. Mead's thesis, and which has been described in the foregoing pages, has properties more closely allied to this, than either the Kino or Catechu. The *circinata* is the best tonic, and is also aromatic, the Spiræa is the most astringent. MEDICINAL PREPARATIONS. An infusion or decoction of the stalks and leaves may be advantageously given, (the root is the least valuable part of the plant,) but the *extract* may be easily obtained in almost any quantity by evaporating the decoction, and may be regarded as the best officinal preparation. DOSES. From gr. iv to gr. vj every two or three hours according to the urgency of symptoms. ℥ss dissolved in oss of boiling water, with the addition of milk and sugar, makes a pleasant drink, and is a convenient and frequently a successful remedy in the protracted stage of cholera.—I.]

SPIRITUS. L. SPIRITUS STILLATITII.

Distilled Spirits.

These are the solutions of the essential oils of vegetables in diluted alcohol, or proof spirit; they are obtained by distilling spirit with recent vegetables; sometimes however they are extemporaneously made by at once dissolving the oils in the spirit. (See *Spiritus Tenuior.*) MEDICAL USES. Like the *distilled waters*, they serve as vehicles for the exhibition of more active medicines; they are also occasionally employed as grateful stimulants. It is unnecessary to dwell on each of these simple spirits, as their virtues are the same as those of the substances from which they are extracted, united to the stimulus of the alcohol. The following are officinal:—*Spirit: Anisi.* L. *Spir. Anisi comp.* L.D. *Armoraciæ comp.* L. *Carui.* L.E.D. *Cinnamomi.* L.E.D. (*Form.* 5, 40.) *Juniperi comp.* L.D. *Lavandulæ.* L.E.D. *Lavandulæ comp.* L.E.D. *Menth. Pip.* L.D. *Menth. Virid.* L. *Myristic.* L.E.D. *Pimentæ.* L.D. *Pulegii.* L. *Raphani comp.* D. *Rosmarini.* L.E.D.

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* See his Inaugural Dissertation, also Med. Repository, Vol. 21. Page 271.

SPIRITUS AMMONIÆ. L.D.

ALCOHOL AMMONIATUM. E.

Spiritus Salis Ammoniaci dulcis. P.L. 1745. *Spiritus Salis Ammoniaci.* P.L. 1720.

This is a solution of ammoniacal gas in spirit; in which a small portion of the subcarbonate is also generally present. It is a powerful stimulant, but it is principally employed as the basis of the following compounds; viz. *Spirit. Ammoniæ Aromat.* L.E.D. *Spirit. Ammoniæ fœtid:* L.E.D. *Spirit. Ammoniæ Succinatus.* L. *Tinctura Castorei comp.* E. *Tinct. Guaiaci comp.* E. *Tinct. Opii Ammoniat.* E.

SPIRITUS AMMONIÆ AROMATICUS. L.D.

ALCOHOL AMMONIATUM AROMATICUM. E.

Spiritus Ammoniæ Compositus. P.L. 1787. *Spiritus Volatilis Aromaticus.* P.L. 1745. *Spiritus salis volatilis oleosus.* P.L. 1720.

This is a solution of several essential oils, (*Cinnamon*, *Cloves*, and *Lemon.* L.—*Rosemary* and *Lemon.* E.—*Lemon* and *Nutmeg.* D.) in the spirit of ammonia. It is a valuable stimulant, and an agreeable adjunct, and efficacious corrective to other remedies, see *Form.* 42, 45. DOSE, fʒss to fʒj. *Officinal Prep.* *Tinct. Guaiac. Ammoniat.* L.D. *Tinct. Valerian. Ammoniat.* L.D.

SPIRITUS AMMONIÆ FŒTIDUS. L.D.

TINCTURA ASSAFŒTIDÆ AMMONIATA. E.

This is a solution of the fœtid volatile oil of the Assafœtida in the spirit of ammonia; as little else than the odour and flavour of the gum-resin is taken up by the menstruum, it cannot be expected to possess many virtues.

SPIRITUS AMMONIÆ SUCCINATUS. L.

This preparation was probably introduced as a substitute of the *Eau de luce*. It is stimulant and antispasmodic. It will be found, if properly prepared, to retain its milkiness for a considerable time, a circumstance by which its value is appreciated.

SPIRITUS ÆTHERIS AROMATICUS. L.

ÆTHER SULPHURICUS CUM ALCOHOLE AROMATICUS. E.

Elixir Vitrioli dulce. P.L. 1745.

This preparation, which was excluded from the London Pharmacopœia of 1787, is now restored. It consists of Sulphuric Ether *one part*, rectified spirit *two parts*, impregnated with aromatics; the presence of spirit is necessary in this preparation, since the volatile oils would be insoluble in the æther without it. MED. USES. A grateful stimulant.

SPIRITUS ÆTHERIS NITRICI. L.

SPIRITUS ÆTHERIS NITROSI. E.

SPIRITUS ÆTHERIUS NITROSUS. D.

Spiritus Nitri dulcis. P.L. 1745.

QUALITIES. A colourless fluid of the *specific gravity* ·850. *Odour*, extremely fragrant; *Taste*, pungent and acidulous; it is very volatile and inflammable. CHEMICAL COMPOSITION. A portion of nitric ether and nitric acid, combined with alcohol. SOLUBILITY. It is soluble both in water and alcohol. INCOMPATIBLE SUBSTANCES. With a solution of *green sulphate of iron* it strikes a deep olive colour, owing probably to its holding a portion of nitrous gas in solution; with the *tinctures of guaiacum* it produces a green or blue coagulum. MED. USES.

When properly diluted, it is refrigerant and diuretic; and has been long employed as a grateful draught in febrile affections; as a diuretic, it frequently proves a valuable auxiliary in dropsy, (see *Form.* 113, 116.) DOSE, ♏ x to xl, in any aqueous vehicle. By age and exposure to the air, it is gradually decomposed, and gives rise to the reproduction of nitrous acid.

SPIRITUS ÆTHERIS SULPHURICI. L.

ÆTHER SULPHURICUS CUM ALCOHOLE. E.
LIQUOR ÆTHERIUS SULPHURICUS. D.
Spiritus Ætheris vitriolici. P.L. 1787.
Spirit. Vitrioli dulcis. 1745.

QUALITIES. A fluid of the *specific gravity* ·816, consisting of *two parts* (by measure) of rectified spirit, and *one part* of sulphuric æther. MED. USES. It has all the properties of æther, but in an inferior degree. DOSE, fʒj to fʒiij.

SPIRITUS ÆTHERIS SULPHURICI COMPOSITUS. L.

This is intended as a substitute for the *Liquor Anodynus* of Hoffman, although its composition was never revealed by him. In addition to its stimulating properties, it is supposed to add those of an anodyne nature. DOSE, fʒss to fʒij. *See Form.* 7.

SPIRITUS RECTIFICATUS. L.

ALCOHOL FORTIUS. E. SPIRITUS VINOSUS
RECTIFICATUS. D.

In this preparation, alcohol is nearly in the highest state of concentration, in which it can be easily prepared in the large way for the purposes of trade; its specific gravity, however, varies in the different pharmacopœias, viz. the London and Edinburgh preparation is stated to have that of ·835, while the rectified spirit of Dublin is ordered to be only ·840. The former at the temperature of 60° *Fah.* consists of 85 parts of pure alcohol, and 15 of water, the latter only of 83 per cent. of alcohol. It is a most powerful stimulant, but is rarely employed except in combination; as a pharmaceutical agent, its use is highly valuable and extensive. (See *Tincturæ.*) During the evaporation of spirit, a considerable reduction of temperature takes place, which renders it a useful ingredient in refrigerant lotions. See *Form.* 147, 148. It has lately been ascertained by Mr. Ritchie of Perth, that "*the degrees of cold induced by the evaporation of spirit of different degrees of strength are proportional to the strength of these spirits, reckoning from the degrees of cold induced by the evaporation of water.*" The application of this theorem will enable us to ascertain the strength of a spirit by the "DIFFERENTIAL THERMOMETER" of Leslie.

SPIRITUS TENUIOR. L.

ALCOHOL DILUTUM. E.

SPIRITUS VINOSUS TENUIOR. D.

Weaker or *Proof Spirit.*

This is rectified spirit diluted with a certain proportion of water, and it is to be regretted that the quantity ordered for this purpose should vary in the different Pharmacopœias; thus, according to the London and Dublin Colleges, its specific gravity is ·930, while the college of Edinburgh directs it to be of ·935. The former consists of 44 per cent. of pure alcohol, and may be formed by mixing *four* parts, by measure, of rectified spirit, with *three* of water; the latter contains only 42 *per cent.* of pure alcohol, and may be made by adding together *equal parts* of rectified spirit and distilled water. Alcohol in this state of dilution is better adapted for taking up the principles of vegetables than rectified spirit; indeed diluted alcohol acts upon bodies as a chemical compound, and will dissolve what neither the same proportion of water nor of alcohol would, if separately applied; we perceive therefore the importance of ensuring uniformity of strength in our spirits. (See *Tincturæ.*) It is necessary to remark that almost all the spirit sold under the name of "*Proof Spirit,*" is contaminated with empyreumatic oil, and is unfit for the purposes of pharmacy; it ought therefore to be extemporaneously prepared by mixing together rectified spirit and water, in the proportions above stated. This, however, is rarely done, except the liquors are intended for the toilette, and hence it has been observed, that the cordials of the apothecary are generally less grateful than those of the distiller, the latter being extremely curious in rectifying and purifying his spirit. If common water be employed for the dilution of alcohol, the resulting spirit will be turbid, owing principally to the precipitation of sulphuric salts; this circumstance lately occasioned considerable embarrassment to the Curators of the Hunterian

Museum at the College of Surgeons, who were compelled to prepare their own spirit, in consequence of an excise regulation preventing the distiller from sending out any spirit of that strength which is required for their anatomical purposes. A curious fact has just been noticed in the Laboratory of the Royal Institution, which is, that diluted spirit *becomes stronger* by being kept in vessels that are carefully closed by bladder! whence it would seem, that alcoholic vapour transpires through this animal membrane less freely than aqueous vapour; we are at present unable to offer a satisfactory explanation of this anomalous case of distillation, but it is probably connected with the different solvent powers of these two liquids, in relation to the animal membrane. MED. USES. Alcohol, although diluted to the degree of proof spirit, is still too strong for internal exhibition; indeed, where its use is indicated, it is more generally given in the form of wine, malt liquors, or ardent spirits, which must be regarded only as diluted alcohol, although each has a peculiarity of operation, owing to the modifying influence of the other elements of the liquid; thus *Brandy** is said to be simply cordial and stomachic;† *Rum*, heating and sudorific: *Gin* and *Whiskey*, diuretic; and *Arrack*,‡ styptic, heating, and narcotic; it seems also probable that a modified effect is produced by the addition of various other substances, such as sugar and acids, which latter bodies, besides their anti-narcotic powers, appear to act by favouring a more perfect combination and mutual penetration of the particles of spirit and water. The effects also which are produced by the habitual use of fermented liquors, differ essentially according to the kind that is drunk; thus Ale and Porter, in consequence of the nutritive matter, and perhaps the invigorating bitter with which they are charged, and the comparatively small proportion of alcohol which they contain, dispose to a plethora, which is not unfrequently terminated by apoplexy; Spirits, on the other hand, induce severe dyspepsia, obstructed and hardened liver, dropsy, and more than half of all our chronical diseases; and Dr. Darwin moreover remarks, that when they arise from this cause, they are liable to become hereditary, even to the third generation, gradually increasing, if the cause be continued, till the family become extinct: with regard to Wine, Rush has truly observed that its effects, like those of tyranny in a well-formed government, are first felt in the extremities, while spirits, like a bold invader, seize at once upon the vitals of the constitution; the different kinds of wine, however, produce very different and even opposite effects, as stated under the history of that article, (see *Vinum.*) The excise officers frequently avail themselves of the peculiar power of the sub-acetate of lead to precipitate colouring matter, in order to remove from seized Holland Gin, the colour which it obtains by being long kept in the tubs in which it is smuggled over. This practice, however, renders the gin liable to gripe.

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* I apprehend that the peculiar flavour of *Cogniac* depends upon the presence of an æthereal spirit, formed by the action of Tartarie or perhaps Acetic acid upon Alcohol; it is on this account that Nitric Æther, when added to Malt spirits, gives them the flavour of French Brandy. The same flavour is also successfully obtained by distilling British spirits over wine lees, or by distilling a spirit obtained from Raisin Wine, which has become acescent.

In new brandy there also appears to be an uncombined acid, giving to it a peculiar taste and quality, which are lost by age. This explains the reason why the addition of five or six drops of "*liquor ammoniæ*," to each bottle of *new* brandy, will impart to it the qualities of that of the oldest date.

† TAYLOR'S RED BOTTLE, commonly called the *Whitworth Doctor's*. British Brandy coloured with Cochineal, and flavoured with oil of Origanum.

‡ MOCK ARRACK. The author of '*Apicius Redivivus*,' directs for the purpose of making a mock Arrack, that two scruples of Benzoic acid be added to every quart of Rum. By a receipt of this kind the celebrated Punch of Vauxhall is prepared.

SPIRITUS TEREBINTHINÆ. See *Terebinthinæ Oleum.*

SPONGIA USTA. L. See *Carbo Ligni.*

STANNI LIMATURA. L.E.D.

The Filings of Tin.

The anthelmintic powers of Tin have been explained by three different hypotheses, viz. 1. *That it acts mechanically by dislodging the mucus from the intestines;* if this be true, it is difficult to explain the fact of its activity being increased by pulverization. 2. *That its efficacy depends upon the presence of arsenic;* if so, why should the *purest* specimens act with equal efficacy?* 3. *That it operates by generating hydrogen gas in*

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* If any additional argument were necessary, we might repeat, that *Arsenic in its metallic state is not poisonous.* As it is almost impossible to reduce metallic arsenic to a state of powder, without its becoming oxidized, M. Renault had recourse to its alloys for deciding the question; and he found that *Mispickel* (an alloy of iron and arsenic,) when given to the extent of two drachms, had no apparent effect; this result agrees with the conclusion drawn by Bayen in his work on Tin, and proves that the arsenic which may be contained in that metal cannot produce any medicinal effect, as it exists in its metallic state. *Recherches Chimiques sur l'Etain, par Bayen et Charlard,* 1781.

the intestinal canal: it has been observed that this opinion is rendered probable by the fact, that sulphur increases its powers. Dose, ʒj or ʒij, mixed with honey, treacle, or conserve, and exhibited for several successive mornings, a purgative medicine being occasionally interposed, (see *Form.* 150.) The use of this remedy, however, is entirely superseded by the more efficacious exhibition of oil of turpentine.

[STATICE LIMONIUM. *Lin.*

STATICE CAROLINIANA. *Walter. Flor. Car.* 118. *Bw. II.* 51. *Radix.*

Marsh-Rosemary. Sea-Lavender. The Root.

Specific Character. Scape, panicled and round; leaves, oblong, glabrous, waved at the edges, entire, destitute of nerves. Grows in all parts of the United States, in low marshy lands, particularly in salt marshes: rises to the height of twelve or fifteen inches; flowers in July; blossoms, blue; perennial. Sensible Properties. The *Taste* of this root is intensely astringent; *Form*, rough and compact; *Colour*, purple or reddish; *Odour*, none. Solubility. Its active proximate principles are soluble in proof spirit and in water, but with the latter it forms the most suitable medicinal preparations. Chemical Composition. Its medicinal qualities appear to depend on the existence of large proportions of tannin and gallic acid; it also contains vegetable extractive and muriate of soda. Medical Use. The Statice has been extensively used both externally and internally as an astringent, and as such it undoubtedly possesses considerable merit. It may be advantageously exhibited internally, for the suppression of all morbid discharges arising from constitutional debility, or too great relaxation of the diseased part, but its active astringency forbids its being employed during the existence of acute inflammation or febrile excitement. It is highly serviceable in checking protracted diarrhœa. The infusion forms an excellent gargle in aphthous affections of the throat and mouth, and also in the passive stage of cynanche tonsillaris. Medicinal Preparations. The infusion and decoction in the proportions of ʒij of the powdered root and oj of water. Dr. Mott deduced the conclusion from his experiments, that cold water extracted the astringent principle of this root equally as well as hot water, and that as the cold infusion was the least disagreeable to the taste, it was the most eligible medicinal preparation.[*] I.]

SUCCI SPISSATI. E. See *Extracta.*

SULPHUR SUBLIMATUM. L.E.D.

Sublimed Sulphur. Flowers of Sulphur.

Chemical Composition. It is probably a triple compound of oxygen, hydrogen, and some unknown base. Solubility. It is insoluble in water and alcohol, but soluble in oils, especially in that of linseed, which is a powerful solvent of all sulphureous substances. Med. Uses. It is laxative and diaphoretic; it acts principally upon the large intestines, and very mildly, whence it proves useful in hemorrhoidal affections (*Form.* 74;) and in consequence of the diaphoresis which it also excites, it is useful in chronic rheumatisms, catarrhs, and in some cutaneous affections. To promote its purgative effects, *magnesia* will be found a serviceable adjunct in hemorrhoids; it may be given in the form of an electuary, or suspended in milk; its solution in oil, (*Oleum Sulphuratum*) is a most nauseous and acrid preparation. When sulphur is combined with metallic remedies, it generally lessens their activity. Its effects in curing psora are universally admitted, and the only objection to its use is the disgusting smell which accompanies its application, see *Unguent: Sulphuris.* Dr. Clarke of Dublin recommends a lotion which he says contains a sufficient impregnation of sulphur for the cure of psora in children, to be made by adding an ounce of broken sulphur to a quart of boiling water, and allowing it to infuse for twelve hours. In this process, the water probably takes up a small portion of sulphurous acid; it is difficult to explain the efficacy of the lotion in any other manner. When sulphur is internally administered, it transpires through the skin in the state of sulphuretted hydrogen, and blackens the silver in the pockets of those who take it. Dose ʒj to ʒiij. Officinal Prep. *Sulphur Lotum.* L.E.D. *Sulphur Præcipitatum.* L. *Unguent. Sulph.* L.E.D. *Unguent. Sulphur. comp.* L.[†]

Sulphur Lotum. When sulphur is kept in loosely covered drawers, its surface is soon acidified, when it is said to operate with griping, hence the common *flowers* are directed to be washed with water to get rid of any sulphurous acid: it is, however, rarely performed, and would seem to be a useless subtlety.

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[*] Experimental Inquiry into the Chemical and Medicinal Properties of the Statice Limonium, by Valentine Mott. Page 37.

[†] Sulphur Lozenges. Sublimed Sulphur *one part,* sugar *eight parts,* Tragacanth mucilage q. s. used in Asthma, and in Hæmorrhoids.

Sulphur Præcipitatum. L. *Lac Sulphuris, P.L.* 1720. This, when pure, differs in no other respect from sublimed sulphur than in its superior whiteness, which it owes to the presence of a small proportion of water; in consequence, however, of its mode of preparation, it always contains a small quantity of sulphate of lime, and not unfrequently other impurities; it may be essayed by pouring upon a suspected sample a sufficient quantity of *liquor potassæ* to cover it, and setting it aside in a warm place to digest, when the sulphur will be dissolved, and the impurities remain; or it might be at once subjected to the operation of heat, which would volatilize the sulphur, and thus separate it from its contaminations.

SYRUPI. L.E.D. *Syrups.*

These are solutions of sugar in water, watery infusions, or in vegetable juices; the proportion of sugar is generally *two parts* to one of the fluid; if it exceed this, the solution will crystallize, if it be less, ferment, and become acescent.* The most certain test of the proper consistence of a syrup is its specific gravity; a bottle that holds three ounces of water at 55° *Fah.* ought to hold four ounces of syrup. Syrups are introduced into medicinal formulæ for several purposes, viz.

I. *To correct or disguise the flavour of disagreeable remedies.* Syrup: Aurantiorum. L.D. (*Form.* 48, 51, 107.)—Limonum. L.E.D.—Simplex (124, 145.)—Zingiberis (88, 95, 105.) Bitter infusions, and saline solutions are rendered more nauseous by the addition of syrups.

II. *To produce Medicinal Effects.* Syrup: Allii. D.—*Altheæ.*

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* Sugar, perfectly free from the extractive matter with which it exists in combination in nature, and which constitutes that compound to which the name of *Sweet Principle* has been given, will not, however diluted, undergo any kind of fermentation; for it is the presence of this peculiar extractive matter, the natural leaven of fruits, that enables it to undergo that process; since, however, all clayed sugars, or modifications of sugar which are short of perfect purity, still contain a small proportion of this extractive, they are capable of fermenting, when sufficiently dilute; Dr. Macculloch, in his essay on the art of making wine, observes, that by the addition of a very small quantity of the *Sulphate of Potass*, the fermentation of syrups and preserves may be effectually prevented; he states also, that the same object may generally be attained by the use of *Oxy-muriate of Potass*, a salt absolutely tasteless, and easily procured.

L.E. (135)—*Acidi Acetosi*. E.—Colchici. E.—Sennæ. E.D. (70)—Scillæ Maritimæ. E.—Rhamni. L. *Papaveris*. L.E.D. (5, 7, 75, 169, 170.)—Rosæ (74)—Zingiberis (47, 150.)

III. *To communicate particular forms.*

Every syrup answers this purpose; for the necessary proportions, see *Electuaria*.

IV. *To communicate an agreeable colour.* Syrup. Croci. L. —Rhæados. L.D. (166, 168.)—Caryophylli. Rubri. D.—Violæ. E. Except that of Saffron, these syrups are rendered green by alkalies, and red by acids.

General Remarks. The practitioner should never introduce syrups into those medicines which are liable to be injured by the generation of acids: I have frequently seen the *cretaceous mixture*, when charged with syrup, increase instead of check, a diarrhœa; and the syrup of poppies, from its disposition to become acescent, will often aggravate rather than allay the cholic of infants. The syrup of Senna furnishes the practitioner with a convenient purgative for children; that of buckthorn is more violent, and is on that account but rarely used, besides which, in preparing it, the chemist not unfrequently substitutes the berries of the *Cornus Sanguinea*, the Dog-berry tree, or those of the *Rhamnus Frangula*, the Alder-buckthorn, for the Rhamnus Catharticus; a circumstance which necessarily renders the efficacy of this syrup variable and uncertain; it is moreover often sophisticated with treacle and jalap. The syrup of the rose, when made with the leaves of the *Damask* rose, is gently laxative, and is well adapted for weak children; it is, however, not unusual, *coloris gratia*, to substitute the leaves of the *red* rose, in which case, the syrup will possess astringent, instead of laxative properties. In the preparation of the syrup of poppies,* the directions of the College are frequently not obeyed; it is sometimes made by dissolving the extract in syrup, formed with coarse sugar, or even with treacle; at others, by adding tincture of opium to a coarse syrup, in the proportion of ℳ x to every f℥j. In the preparation of the syrup of violets, the juice of red cabbage is generally substituted; this is at least a harmless fraud. **Note.** The syrups which are printed in italics are very susceptible of decomposition, and should be kept in cool places.

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* **Major Cochrane's Cough Medicine.** White poppy heads, without seeds, are made into a decoction, which is strained, and boiled again with vinegar and brown sugar, until it assumes the consistence of syrup, which is then acidified by *elixir of vitriol*.

TABACI FOLIA. L.E.

(Nicotiana Tabacum. Folia Siccata. *Virginiana.*)

NICOTIANÆ FOLIA. D.

Tobacco.

QUALITIES. *Odour*, strong, narcotic, and fœtid; *Taste*, bitter and extremely acrid; *Colour*, yellowish green, (its brown appearance is artificial, being produced by the action of *sulphate of iron.*) CHEMICAL COMPOSITION. Mucilage, albumen, gluten, extractive, a bitter principle, *an essential oil*, nitrate of potass, which occasions its deflagration, muriate of potass, and a peculiar proximate principle upon which the properties of the plant are supposed to depend, and which has therefore been named *Nicotin.*[*] Vauquelin considers it as approaching the volatile oils in its properties; it is colourless, has an acrid taste, and the peculiar smell of tobacco, and occasions violent sneezing; with alcohol and water, it produces colourless solutions, from which it is thrown down by tincture of galls. SOLUBILITY. Tobacco yields its active matter both to water and spirit; but more perfectly to the latter; long coction weakens its powers. An oil of tobacco of a most powerful nature, may be obtained by distilling the leaves and separating it from the water, on the top of which it will be found to float.[†] MEDI-

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[*] It will appear that there are two principles of activity in Tobacco, an *essential oil*, and *nicotin*, either of which are, individually, capable of producing death, but by a very different physiological action, the former by its effects on the brain, the latter by its influence on the heart! See vol. i. p. 163.

[†] It appears very probable that the "*juice of cursed hebenon*," by which, according to Shakspeare, the king of Denmark was poisoned, was no other than the essential oil of Tobacco:—

> ——— "Sleeping within mine orchard,
> My custom always of the afternoon,
> Upon my secure hour thy uncle stole,
> With juice of *cursed hebenon* in a vial,
> And in the porches of mine ears, did pour
> The leperous distilment."

In the first place, the learned commentator, Dr. Grey, observes, that the word here used (*hebenon*,) was more probably designated by a *metathesis*, either of the poet or transcriber, for *henebon*, i. e. henbane. Now it appears from Gerarde, that "*tabaco*" was commonly called *henbane of Peru*, (hyoscyamus Peruvianus,) and when we consider how high the public prejudice ran against this herb in the reign of James, it seems very likely that Shakspeare should have selected it, as an agent of extraordinary malignity. No preparation of the hyoscyamus, with which we are acquainted, would produce death by application to the ear, whereas the essential oil of Tobacco would, without doubt, occasion a fatal issue. The term *distilment* has also called forth a remark from Steevens, which is calculated to support this conjecture; surely, says he, this expression signifies, that the preparation was the result of a distillation.

CINAL PROPERTIES. Tobacco is endued with energetic poisonous properties, producing generally a universal tremor which is rarely the result of other poisons; the experiments of M. Orfila moreover demonstrate, that the action of Tobacco is much more energetic when the soluble portion is injected into the anus, than when it is applied to the cellular texture, and for a still stronger reason, than when introduced into the stomach. Mr. Brodie, from the result of a well-devised experiment, has deduced the conclusion that the infusion of Tobacco acts upon the heart, occasioning syncope, through the medium of the nervous system. USES. As a powerful sedative, it is sometimes valuable in medical practice; the leaves, when applied in the form of a cataplasm to the pit of the stomach, produce an emetic operation; (*Form.* 67.) In cases of obstinate constipation, depending upon violent spasmodic constriction, as in *ileus* or *incarcerated hernia*, clysters of the smoke of Tobacco, or of an infusion made according to the London College, produce almost immediate relief, (*Form.* 26;) the practice is not unfrequently attended with severe vomiting, extreme debility, and cold sweats, circumstances which render its administration highly dangerous in cases wherein the patient has been already exhausted by previous suffering. I remember witnessing a lamentable instance of this truth some years ago; a medical practitioner after repeated trials to reduce a strangulated hernia, injected an infusion of Tobacco, and shortly afterward sent the patient in a carriage to the Westminster hospital, for the purpose of undergoing the operation; but the unfortunate man arrived only a few minutes before he expired. Clysters of Tobacco were some years ago recommended in America, for the purpose of forwarding difficult parturition, by inducing relaxation and consequent dilatation of the *os uteri*, but the alarming symptoms which followed the single case in which Tobacco was thus employed, ought, says *Dr. Merriman*, to prevent a repetition of the experiment.* It was also formerly proposed to inject infusions of Tobacco, for the purpose of recovering persons in a state of *asphyxia*, from drowning; it is difficult to explain how such an idea could have entered into the mind of the rational physiologist. Smoking or chewing Tobacco has been also advised in cases of spasmodic asthma, and as a general sedative to relieve suffering; in the process of *smoking*, the oil is separated, and being rendered empyreumatic by heat, it is thus applied to the fauces in its most active state. As a diuretic it was successfully exhibited by Dr. Fowler, but as its operation is uncertain and violent, and appears to be very analogous to that of Digitalis, which is far more safe and manageable, it has been very judiciously discarded from practice. The external application of Tobacco in the form of cataplasm or infusion, has been applied to several species of cutaneous disease, but even in this state it is liable to exert its virulent effects. A woman applied to the heads of three children afflicted with *tinea capitis*, a liniment consisting of powdered tobacco and butter, soon after which they experienced vertigo, violent vomiting, and fainting. (*Ephemerides des Curieux de la Nature*, Dec: ii, An: i, p. 46.) It is a curious fact, that the juice of the green leaves instantly cures the stinging of nettles.

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* See "*An Essay on the means of lessening Pain, and facilitating certain Cases of difficult Parturition*, by W. P. Dewees, M.D. 1806; also *Med. Journ.* vol. xviii.

ADULTERATIONS. When it exhales a fetid odour, we may infer that it has been badly prepared, and not deprived of all its mucus; when pungent, the presence of some deleterious drug is indicated: Cascarilla is very usually added to impart a peculiar flavour; Nitre is also employed for the sake of making it kindle more rapidly, and to impress a lively sensation on the tongue; its vapour is of course very injurious to the lungs: its presence may be detected by treating a suspected sample with hot water, and after filtering the solution through charcoal, setting it aside in order that it may yield its crystals by evaporation. Traces of *Lead*, *Copper*, or *Antimony*, may be discovered by boiling the Tobacco in strong vinegar, and, after filtering it as before, by assaying it with appropriate tests. *Black Hellebore*, *Alum*, *Sugar*, and *Corrosive sublimate* are among the more useful sophistications. *Dried Dock* leaves are also sometimes substituted. OFFICINAL PREP: *Infus: Tabacci*. L. *Vinum Nicotian; Tabac*. E.

SNUFF. This well-known errhine is prepared from the dried leaves of Tobacco; in its manufacture, however, numerous additions are made which are kept secret. *Salt* is added for the purpose of increasing its weight; *Urine*, Muriate of ammonia, and powdered Glass, to heighten its acrimony. The varied flavour of different *Snuffs* is owing to the leaf being in greater or less perfection; or to its having undergone some degree of fermentation; thus, for instance, the *Macouba Snuff* of Martinique is principally indebted for its acknowledged superiority to the fermentation which the Tobacco undergoes, from being moistened with the best cane juice; other kinds are excited into fermentation by moistening them with molasses and water.

Snuff possesses all the powers of Tobacco; the celebrated Santeuil experienced vomiting and horrible pains, amidst which he expired, in consequence of having drank a glass of wine, into which had been put some Spanish snuff.*

TAMARINDI PULPA. L. (TAMARINDUS INDICA.)
TAMARINDUS: FRUCTUS. D.
FRUCTUS CONDITUS. E.
The Pulp or preserved Fruit of the *Tamarind.*†

QUALITIES. *Taste*, sweetish acid; *Odour*, none. CHEMICAL COMPOSITION. ℥j of Tamarinds is composed of Citric acid grs. 45, Malic acid grs. 2, Supertartrate of potass grs. 15, together with sugar, gum, jelly, fecula, and woody fibre. USES. A pleasant febrifuge may be formed by infusing Tamarinds in water or milk; they improve the taste of the more nauseous cathartics. OFFICINAL PREP: *Confectio Cassiæ.* L.E.D. *Infus: Tamarind: cum Senna.* E.D. CAUTION. Copper vessels should never be employed for the preparation of any compound which contains *Tamarinds.*

TARAXACI RADIX. L.E.
(Leontodon Taraxacum.) Dens Leonis.
Dandelion.

QUALITIES. *Odour*, none; *Taste*, bitter, and somewhat sweet and acidulous. CHEMICAL COMPOSITION. The active principles appear to consist of extractive, gluten, a bitter principle (*not resinous*,) and tartaric acid. SOLUBILITY. Water extracts its virtues much better than spirit. INCOMPATIBLE SUBSTANCES. *Infusion of Galls*, *Nitrate of Silver*, *Oxy-muriate of Mercury*, *Acetate of Lead*, and *Sulphate of Iron* occasion precipitates in its solutions. MED. USES. It has long enjoyed the reputation of proving beneficial in obstructions of the liver, and in visceral diseases; Bergius extols its use in these complaints, and recommends the recent root to be boiled in whey or broth. Dr. Pemberton has more recently added his testimony to its value; he observes that he has seen great advantage result from using the extract in chronic inflammation, and incipient scirrhus of the liver, and in chronic derangement of the stomach. **Forms of Exhibition.** In that of extract, or in decoction made by boiling ℥j of the sliced root in oj of water down to oss, adding to the strained liquid ʒj of Cream of tartar, the recent full-grown root only should be used. **Dose** f℥ij, twice or thrice a day. **Officinal Prep**: *Extract: Taraxaci.* The roots are roasted and used at Gottingen by the poorer people for coffee, from which a decoction of them properly prepared can hardly be distinguished.* The leaves of this plant are blanched, and very commonly used on the continent as a sallad.

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* CEPHALIC SNUFF. The basis of this errhine, is powdered *Asarum*, diluted with some vegetable powder.

† Tamarind, from *Timmer* a Date, and *Hend* India. *Timmer-hend*, i. e. Date of India.

TEREBINTHINA. L.E.D. *Turpentine.*

Most species of Pinus† may be made to yield (and many of them produce spontaneously) a remarkable resinous juice, usually called *Turpentine;* an appellation, however, which more properly belongs to the product of a different genus, called by Linnæus *Pistachia*, which contains the true *Terebinthus*‡ of the ancients.

Qualities. *Consistence*, semi-fluid and tenacious, but becoming more or less concrete by age; *Odour*, aromatic; *Taste*, pungent, austere, and astringent. It is inflammable. **Solubility.** It is entirely soluble in rectified spirit, but not at all in water; although it becomes miscible with that fluid, by the mediation of the yelk or the white of an egg, but more elegantly by that of vegetable mucilage, and forms a milky liquor. It is capable of entering into union with fixed oils. **Chemical Composition.** Resin, and an essential oil, the proportions of which vary according to the species of Pine from which it is obtained. They all, however. possess the same general chemical, as well as medicinal properties, *viz.* When internally taken, says Dr. Maton, they seem to warm the *viscera*, raise the pulse, and impart additional excitement to the whole vascular system; applied externally, they increase the tone of the part, counteract indolence of action, and deterge, as it were, ill-conditioned ulcers. *Internal* ulcerations, indeed, especially of the urinary passages, as well as laxities of the seminal and uterine vessels, are supposed to be diminished by the exhibition of preparations of this nature. They certainly appear to act in a peculiar manner on the urinary organs, impregnating the water with a violet smell, and there are strong grounds for believing that its volatile element developed by the powers of digestion, passes into the circulation, and is eliminated by the kidneys, whose secreting vessels are thus stimulated *by its contact*. (*Vol.* 1, *p*. 123.) Pulmonary complaints, as obstinate coughs and asthmatic affections, have been said to give way to medicines of this class, yet, in modern practice, recourse is rarely had to them in such cases, and their exhibition is even considered hazardous. The ancients were accustomed to medicate their wines with various Terebinthinate substances, for the effect of which, see *Vinum*.

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* Various substances have been proposed at different times as substitutes for Coffee. In the "*Fourth Century of Observations*" in the "*Miscellanea Curiosa*," we find a critical dissertation on the (*Cahve*) Coffee of the Arabians; and on European Coffee, or such as may be prepared from grain or pulse. Dillenius gives the result of his own preparations made with Peas, Beans, and Kidney Beans, but says that that made from Rye comes the nearest to true Coffee, and was with difficulty distinguished from it. This fact is curious, in as much as a spurious Coffee has been lately vended, which is nothing more than roasted Rye. The article is well known by the name of "**Hunt's Œconomical Breakfast Powder.**"

† See "*Some Account of the Medicinal and other Uses of various Substances prepared from Trees of the genus Pinus*, by W. G. **Maton**, M.D. &c." being a Supplement to Mr. Lambert's splendid work on that genus.

‡ The Τέρμινθος of Theophrastus (lib. 3, c. 3.) and Dioscorides (lib. 1. c. 76.) from which the word *Terebinthus* seems to have been derived.

The particular preparations of turpentine most employed in medicine, will be noticed under the different species.

1. TEREBINTHINA CANADENSIS. (Pinus Balsamea. *Resina Liquida*.) *Canada Turpentine*, or *Canada Balsam*.* This is a transparent whitish juice, brought to this country from Canada, and apparently, says Dr. Maton, not very different in its qualities from the celebrated *Balm of Gilead*,† so high in esteem among the eastern nations, and so strongly recommended in a variety of complaints. Hitherto, however, it has not been much employed in England. Its odour is agreeable, and its taste strong and pungent.

2. TEREBINTHINA CHIA. (Pistachia Terebinthus.) *Chio*, or *Cyprus Turpentine*. The superiority of this species to all the products of the pine tribe, was well known to, and described by, most of the ancient writers on the materia medica. It is pellucid, with a bluish-green cast.

3. TEREBINTHINA VULGARIS. (Pinus Sylvestris. *Scotch Fir*.) *Common Turpentine*. *Horse Turpentine*. This species is more coarse and dense than any other kind, and has an opaque light-brown colour; its consistence may be compared to that of honey; the taste is very acrid, hot, and disagree-

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* The term *Balsam* is very improperly applied to this substance, since it contains no *Benzoic Acid*.

† The product of the *Amyris Gileadensis*, and probably the *Balsamum Judaicum*, *Syriacum e Mecca*, *Opobalsamum*, &c. of the older writers.

able, and the smell much less pleasant than either the *Venice* or the *Strasburg* turpentine. It is the kind which, as its name implies, is most commonly employed, and although inferior in quality to that of the turpentine-tree, *Pistachia Terebinthus*. (Chio or Cyprus,) the Larch, *Pinus Laryx*, (Venice Turpentine,) and the Silver Fir, *Pinus Picea*, (Strasburg Turpentine,) especially for internal use, yet it is too often substituted for them in the shops of the druggist. The Colleges of London and Edinburgh direct the common turpentine to be used chiefly in external applications, for which it was also much employed by the ancients. Celsus mentions "*Resina liquida pinea*," as entering into the composition of many of his "*Malagmata*," and the "*Resina liquida*" of other writers would appear to be of the same kind. The *Unguentum Elemi Compositum* contains this resinous juice as a principal ingredient.*

4. Terebinthina Veneta. (Pinus Larix.†) *The Larch. Venice Turpentine.* This resin is by most writers, and in the shops, esteemed the best, after that of *Pistachia Terebinthus*, of those juices commonly called *Turpentines*. It is usually thinner than any other kind, of a pale yellowish colour, and of a hot, pungent, bitterish taste; the smell is strong, and far from being agreeable. Although it bears the name of *Venice Turpentine*, very little of it is exported from the Venetian territories; but it is probable that the merchants of that country were the first who substituted it for the genuine Turpentine of Cyprus. The resinous juice of the Larch is said to remain always, or at least at a very long time, in a state of liquidity; a property which is particularly adverted to by Pliny.‡ As a Diuretic, the *Venice* Turpentine has been generally preferred to all the other kinds; and it is said to relax the bowels more, for which reason *Riverius*§ considers it as being safer than other irritating diuretics.

5. Terebinthina Argentoratensis. (Pinus Picea.) *Strasburg Turpentine.* This resin is generally of a middle consistence between that of the *Terebinthus* and the *Larix*; more

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* *Maton*, l. c.

† A fluid extract, prepared by decoction from the twigs of this species of Fir, is the well-known *Essence of Spruce*, which, when well fermented with melasses, forms the popular beverage, called "*Spruce Beer*," (Cerevisia Pini Laricis.)

True Riga Balsam, *Beaume de Carpathes*, from the shoots of the *Pinus Cembra*, previously bruised, and macerated for a month in water.

This same fir also affords Briançon Turpentine.

Hungarian Balsam.—A spontaneous exudation from the *P. Pumilio*, or *Mugho Pine*.

‡ Lib. 16, c. 10.

§ Prax. Med. Lib. 14. c. 1.

transparent and less tenacious than either; in colour yellowish brown; in smell more agreeable than any other turpentine, except the Cyprian; in taste the bitterest, yet the least acrid.

Forms of Exhibition. The turpentines may be either made into pills with powdered liquorice-root, or suspended in water by the intervention of egg or mucilage; for which purpose, ℥j requires the yelk of one egg, or ʒiss of gum arabic. *Dose*, gr. x to ʒj.

TEREBINTHINÆ OLEUM. L.E.D.

Oil of Turpentine.

QUALITIES. *Form*, a limpid and colourless liquid, whose specific gravity is only ·792; *Odour*, strong, penetrating, and peculiar; *Taste*, hot, bitter, and pungent. CHEMICAL COMPOSITION. It is an essential oil, possessing, however, peculiar habitudes with respect to alcohol, being readily dissolved by *hot* alcohol, but separating again in drops, as the spirit cools; in the cold it is very sparingly soluble in the strongest alcohol, but it dissolves completely in six parts of sulphuric æther. MEDICAL USES. It acts according to the dose, either on the *primæ viæ* producing catharsis, or on the kidneys, exciting diuresis; thus its operation offers another illustration of the views which I have so frequently urged during the progress of the present work; it furnishes a striking example of the important influence of quantity, or *dose*, in determining the specific operation of a remedy; thus *two fluid drachms* of the oil may so excite the urinary organs as to produce even bloody urine, and the other ill effects described by Boerhaave and Lange; whereas *six fluid drachms*, or a *fluid ounce*, will stimulate the bowels, and produce scarcely any apparent effect upon the kidneys.

As a medicine acting powerfully on the first passages, its value seems only to have been lately appreciated; in Tænia, it may be said to act almost as a specific remedy, discharging it in all cases, *dead*. In obstinate constipation, depending on affections of the brain, I have lately had several opportunities of witnessing its beneficial effects; in an unfortunate instance of *Hydrocephalus acutus* in a boy of thirteen years of age,* it brought away an accumulation of feculent matter almost incredible as to quantity, after the total failure of the strongest doses of ordinary purgatives; and I believe, if its dose be sufficiently large, that it may generally be administered with perfect safety and confidence. Dr. Latham has long regarded it as a valuable medicine in Epilepsy, in which cases it may in the first instance prove beneficial by unloading the bowels, and subsequently in producing an affection of the head peculiar to its use; and, which generally succeeds a large dose, it is an approach to intoxication, but is unaccompanied with that hilarity and elevation of thought that so usually follow the potation of spirituous liquors. In small doses it produces diuresis, and is used with much advantage in sciatica and lumbago.* Its use in diseases of the kidneys originating from ulcerations, and obstructions in those organs, has been very highly extolled. Cheyne, in his Essay on the gout, recommends it as a specific in Sciatica; upon this subject my own experience so completely confirms the truth of Dr. Maton's observations, that I shall here insert them. "If," says he, "I may be allowed to offer the result of my own practice, its effects are in a few instances successful in the removal of that disease; and even those cases which I have seen cured under its use, appeared to be rather of the symptomatic than idiopathic kind; it is reasonable to presume that the sciatic nerve, from its origin and course, may owe some of its morbid affections to an obstructed ureter, as well as to a rheumatic diathesis. *Form.* 50. Hunter spoke of oil of turpentine as a styptic, and it has been administered in the Almond emulsion in cases of internal hemorrhage of an active nature. We should however be very careful how we make such an experiment. This oil has the effect of communicating the odour of violets to the urine of those who take it, and what is still more extraordinary, to those even who merely expose themselves for a short time to its effluvia:† a mixture of ℞ x of this oil with f℥j of almond oil, introduced upon cotton into the ears, is serviceable in cases of deafness resulting from a diseased action of the ceruminiferous glands; it is also employed as a local stimulant in a variety of cases: and in colic, and obstinate constipation, it is sometimes exhibited in the form of an enema. As a stimulating liniment its advantages are considerable, see *Liniment. Terebinthi.* In Germany, Norway, and some parts of the Russian Empire, this essential oil is frequently used as a remedy for lesions of the tendons, and other bruises.* Dose as an anthelmintic, f℥ss—fʒij, repeated every eight hours until the worm is ejected; in these large quantities it is more convenient, as well as more efficacious, to administer it like castor oil, floating upon some liquid aromatic vehicle:† by rubbing up Oil of Turpentine with mucilage, we do but render it more pungent, and difficult to swallow. As a diuretic or stimulant it may be given in the form of an electuary, in doses of from ♏x to fʒj. It may also be employed as a very active clyster, made by carefully incorporating one or two table-spoonsful of the oil with the yelk of an egg, and adding to it a pint of thin mucilage. This terebinthinate clyster is well calculated to relieve a paroxysm of flatulent cholic. Officinal Prep. *Liniment. Terebinth.* L. The Pharmacopœias direct the rectification of the oil by redistillation,‡ when it is commonly called *Spirit* of turpentine, but it appears to be an unnecessary refinement. Dr. Nimmo has proposed the following process for purifying the oil intended for medicinal use, by which it is said to have its disagreeable flavour lessened without sustaining any loss of efficacy. To eight parts of the oil, add one part of the strongest alcohol, and let them be well agitated together. In a few minutes a separation takes place; the oil, unless very impure, falls to the bottom, and the alcohol, having discharged the impurities, floats at the top. Pour off the alcoholic portion, add a similar quantity of alcohol, and proceed as before. If this be repeated three or four times, the oil will become nearly tasteless, almost inodorous, and when evaporated will leave no residuum. But pure as the oil may be thus rendered, it speedily returns to its original condition.

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* This case, which I attended with Mr. Machell of Great Ryder Street, was occasioned by a violent whirling of the body in a frolic! the circumstances attending it are so interesting that I shall take an early opportunity of submitting the details to the profession.

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* See "A Memoir on the employment of Terebinthinous Remedies in Disease, by James Copland, M. D." in the *Medical and Physical Journal for August*, 1821, *p*. 185.

† Kaauw *de Persp*. N. 430.

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* The Guestonian Embrocation for Rheumatism. ℞. *Ol: Terebinth:* f℥ iss—*Ol: Oliv:* f℥ iss—*Acid: Sulph. dilut:* fʒ iij.

† Scouring Drops. The peculiar odour which distinguishes oil of turpentine, may be destroyed by the addition of a few drops of some fragrant volatile oil, as that of lemons: a combination of this kind is commonly sold under the name of Scouring Drops, for the purpose of removing paint, oil, or grease from cloth.

‡ Dutch, or Haerlem Drops. The basis of this nostrum consists of the residue of this redistillation, which is a thick, red, resinous matter, to which the name of *Balsam of Turpentine* has been given; a preparation, however, is frequently vended as "*Dutch Drops*," which is a mixture of oil of turpentine, tincture of guaiacum, spirit of nitric ether, with small portions of the oils of amber and cloves.

TIGLII OLEUM. Oil of Tiglium. (Croton Tiglium. *Oleum e Seminibus expressum.*)

The *Croton Tiglium* is a native of the island of Ceylon, and is found in Malabar, China, Cocinchina, and the Molucca Islands. Every part of the plant would seem to be endowed with medicinal activity; the *root* acts as a drastic purgative, and when pulverized, and exhibited in the dose of a few grains, is considered at Amboyna and Batavia as a specific for dropsy; the *wood* (*lignum Pavanæ*) produces, when administered in small doses, a diaphoretic effect, and in larger ones it proves drastic; the *leaves* are also purgative, and when dried and powdered are supposed to afford an antidote against the bite of the *cobra del Capella*. The *seeds*, however, are the parts which have been more generally employed in medicine, the effects of which appear to have been well known for nearly a thousand years.* They were early introduced into Europe, and long known under the names of *Grana Molucca—Tilii Grana,*—and *Grana Tiglia.*† It appears that they were at first very frequently administered, but their extreme acrimony and violence,‡ and probably the accidents which arose from their injudicious use, soon banished the article from medical practice; in India, however, these seeds are still employed as an effectual purgative, after first undergoing the process of roasting or baking, for the purpose of removing the shell, rendering the nut pulverulent, and at the same time of moderating its acrimonious qualities.§ The expressed oil of these seeds does not appear to have been obtained in a separate form until a later period; Lemery speaks of it, and Geoffroy in directing its dose cautions us against giving more than ʒj!—he probably meant a drop. Its use has very lately been revived, and there can be little doubt but that under proper restrictions, it may become a valuable acquisition to the practitioner. The profession is indebted for its late introduction, or rather revival, to Mr. E. Conwell, of the East India Company's Medical Service, on the Madras Establishment, who[*] having for many years prescribed it with advantage, introduced a quantity of it for trial in London, through the medium of his friend, Mr. Short, of Ratcliff Highway.

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* *Serapion*, the younger, one of the earlier Arabian writers on the Materia Medica, describes them as bearing some analogy to "*Pine nuts.*"

† The reader will find an interesting account of the Botanical Literature of this plant, by J. Frost, Director of the Medico-Botanical Society, in the 17th *volume of the Medical Repository*, p. 461.

‡ Rumphius, (*Herb: Amboinense*) in speaking of the *Grana Molucca*, observes that women who are desirous of getting rid of their husbands, give them four grains at one dose.

§ See Ainslie's Materia Medica of Hindostan.

Qualities. This expressed oil has a yellow colour, a faint odour, and an acrid taste; these qualities, however, will be found to vary in different samples; but the fact, as Dr. Nimmo[†] has justly observed, may be fairly explained, without suspecting the existence of any fraud, by supposing that the seeds have undergone a different degree of torrefaction, in order to separate the oil from the farinaceous part. **Chemical Comp.** The recent experiments of Dr. Nimmo have very satisfactorily shown that this oil consists of 45 parts of an *Acrid purgative principle*, and 55 of a fixed oil resembling that of olives, and not possessed of any cathartic property. The acrid principle appears to reside in a resinous matter soluble in alcohol and sulphuric æther, and in volatile and fixed oils. I have lately repeated some of Dr. Nimmo's experiments on a recently imported sample of oil, and with similar results. The acrid principle appears to bear a strong analogy to that which I separated from elaterium, and as I gave to this latter principle the term *Elatin*, it seems to me that we might with much propriety apply the name *Tiglin* to the former, especially as it does not appear to possess any of the characters and habitudes of a solifiable basis; at all events the adoption of such a term will obviate the necessity of circumlocution in our descriptions. **Solubility.** By alcohol the oil undergoes a ready decomposition; the *Tiglin* is dissolved together with a very minute quantity of the oily part. Ether and oil of turpentine dissolve the whole; a fact which enables us, by digesting the seeds in these menstrua, to obtain the article in as genuine, and certainly in a much more uniform, condition, than by the process of torrefaction and expression, as practised in India; for this fact we are also indebted to Dr. Nimmo. **Med. Uses.** As far as I have been able to ascertain the fact, this oil does not appear to produce any effects which cannot be commanded by other drastic purgatives; its value depends upon the facility with which it may be administered; in some cases it is amply sufficient to touch the tongue, in others, a drop or two will be required. In maniacs, and in cases where the administration of bulky medicines is extremely difficult, it would seem to offer a decided advantage. FORMS OF EXHIBITION. It has been usually given in this country in the proportion of from one to two drops, in the form of pills. Dr. Nimmo's discovery with respect to the chemical composition of the oil, very naturally suggested to him the mode of administering it in the form of an alcoholic tincture, (*Tinctura Tiglii*,) and he has found by experience that such a preparation furnishes the means of readily apportioning the dose to the various circumstances of the case; thus he found that in administering a tincture* in doses equivalent to the number of drops decomposed, the same effects were produced as have been attributed to the entire oil. ADULTERATIONS. Much has been said upon the fraudulent admixture of this comparatively expensive article with the cheaper fixed oils; and we believe with much truth; a circumstance which will of necessity prevent the general use of the article; and occasion very different reports with respect to its value and activity, Dr. Nimmo, however, proposes a method of detecting such adulteration, by a process suggested by the results of his experiments upon its composition, and whose rationalé will be easily understood after the chemical history that has been just presented.

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[*] I state this fact on the authority of a communication made by order of the Court of Directors of the East India Company, to the College of Physicians, enclosing the extract of a letter from Mr. Conwell.

[†] Journal of Science and the Arts. No. xxvi.

"Let a very light phial be counterpoised in an accurate balance; pour into it 50 grains of the suspected oil, add alcohol, (which has been previously digested† upon olive oil,) agitate them well, pour off the solution, and add more alcohol as before, until the dissolved portion is diffused in such a proportion of alcohol that each half drachm measure shall contain equal to one dose of the oil of *Tiglium* for an adult. By afterward placing the phial near a fire, to evaporate what remains of the alcohol in the bottle, *if the residuum be to that which has been abstracted by the alcohol as* 55 to 45, *the oil is genuine*. If olive, or any other oil little soluble in alcohol has been employed as the adulterating agent, it is evident that the residuum will be in a larger proportion; but should *Castor oil* have been employed for that purpose, the proportion of the residuum will be smaller, even than in the genuine medicine.

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* In making such a tincture we should employ a fluid-drachm of Rectified Spirit, to two drops of the oil. They should be digested for some time and then filtered. With all the care that can be used, a certain portion of the spirit will be evaporated, and half a fluid-drachm of the tincture may be thus considered as nearly equivalent to a drop and a half of the oil.

† The object of this preliminary step is to saturate the alcohol with a fixed oil, that it may not dissolve any portion of that in the *Tiglium*, and thus confuse the results. The quantity of fixed oil which alcohol is capable of dissolving is extremely small, and will not in the least degree injure the alcoholic solution for subsequent medicinal use.

TINCTURÆ. L.E.D. *Tinctures.*

These consist of alcohol, proof spirit, or spirit of greater or less density, holding in solution one or more of those proximate principles of vegetable or animal matter which are soluble in that menstruum, viz. *Sugar*, *resin*, *extractive*, *tannin*, *cinchonia*, *camphor*, *volatile oils*, *morphia*, *emetin*, *conein*, *elatin*, *tiglin*, and *several acids*. The proper solvent of those bodies termed *gum-resins*, appears to be proof spirit. The compilers of the *Codex Medicamentarius* of Paris, have defined the different degrees of spirituous strength requisite for the full and perfect extraction of the active elements of different bodies with great truth and nicety; thus they direct for these purposes a spirit of three different standards, viz. 36 (*Sp. gr.* ·837,) 32 (·856) 22, (·915) of Beaume's hydrometer; with the first are prepared the *resinous* tinctures; with the second those wherein the *resinous*, *extractive*, or *gummy* elements, hold nearly an equal place; and with the third those in which the latter predominate. We are moreover indebted to this committee for having set at rest a question which has been long doubtful, whether the addition of alkaline agents increases the extractive powers of the spirit? They have indeed ascertained by experiment, that the reverse not frequently obtains; for instance, they found that a smaller proportion of *guaiacum* was dissolved by the spirit of ammonia, than by alcohol of the same strength, and that the quantity of matter dissolved from the *root of Valerian* was the same in both cases. Very active substances, soluble in alcohol, are those which are more particularly adapted for tinctures, since they furnish preparations which are efficient in small doses, and very manageable in extemporaneous prescription, such are the tinctures of *Opium*, *Digitalis*, *Hyoscyamus*, *Scilla*, *&c.* and from the chemical analysis of *Elaterium*, there can be no doubt but that a very active and useful tincture of that substance might be introduced into practice; while Dr. Nimmo has very clearly proved that the active matter of the *Croton Tiglium* may be thus concentrated, see *Tiglii Oleum*. On the contrary, substances of little activity, except in large doses, are the least adapted for this form of exhibition, as in such cases the solvent will act more powerfully on the living system, than the principles which it may hold in solution, and when continued for any length of time, will lay the foundation of the pernicious custom of dram drinking; such tinctures, however, are not without their value in combination; they sometimes increase the efficacy, and often correct the operation or disguise the flavour of the medicines with which they may be united; for example, the cathartic tinctures in *Formula* 70, augment the purgative powers of the combination, at the same time that they correct its unpleasant operation; many other illustrations are presented in the different formulæ, for the explanation of which I must refer the student to the *Key Letters.* The addition of a tincture has likewise the effect of preserving decoctions and infusions from spontaneous decomposition, the *compound tincture of Cardamoms* answers such an object in the *compound decoction of Aloes.* Tinctures are sometimes made with æther, but they are generally more strongly characterized by the nature of the menstruum than by that of the substance dissolved in it; indeed, æther is used in these cases, not to dissolve substances which would resist the action of alcohol and water, but for the sake of its own direct action on the body; thus the Edinburgh pharmacopœia directs an *Æthereal Tincture of Aloes*, which is more penetrating and stimulant than the alcoholic tinctures; the London College, with the exception of the *Aromatic Spirit of Æther*, does not recognise any preparation of this nature: I have already alluded to the *Æthereal Tincture of Digitalis* of the French Codex, than which nothing can be more injudicious, for the digitalis does not amount to more than 1-70th part of the tincture, and must therefore be entirely counteracted by the stimulant effects of the menstruum. The same objection cannot be urged against the æthereal tinctures of *Castor*, *Musk*, and *Amber*, since in these cases, the subject and the menstruum concur in their mode of operation.

Tinctures derive their names from the substances which impart activity to them, and as the medicinal history of each substance is detailed under its proper head, it will be unnecessary to dwell at any length upon the individual virtues of these tinctures.

1. *Prepared with Rectified Spirit.*

TINCTURA ASSAFŒTIDÆ. L.D. *Dose,* f℥ss to f℥j.

——— BENZOES COMP. L.E.D. *Balsamum Traumaticum,* P.L. 1745. This is a combination of Benzoin, Storax, and Tolu, with aloes; it is regarded as a stimulating expectorant, but it is now very rarely used except as an application to wounds and languid ulcers. It is sold under the name of *Friar's Balsam;* and with respect to the use of this preparation as a *Styptic* the public have fallen into a serious error;

fresh wounds it must necessarily injure, not only by its stimulating qualities, but by the separation of the resins which take place on its intermixture with the blood; these form a substance, which absolutely prevents what is most desirable in such a case,—the sides of the wound coming in contact and uniting by the first intention.* *Medico-Chir: Pharm.*

TINCTURA CASTOREI. L.E. *Dose*, ♏xx to fʒij. See Form. 20, 23, 25, 76, 97, 136.

TINCTURA CASTOREI COMPOSITA. E. This is much more active than the preceding tincture, as it contains assafœtida, and its menstruum is ammoniated alcohol.

TINCTURA GUAIACI. L.E.D. A simple solution of the guaiac.

TINCTURA GUAIACI AMMONIATA. This is a solution of the guaiac in the aromatic spirit of ammonia, and is consequently more stimulating than the preceding one, and more efficacious as a sudorific; after arterial action is properly reduced, it is certainly one of our best remedies in rheumatism. *Dose*, fʒj to fʒij, at bed-time, and its effects should be promoted by some warm beverage. It is worthy of remark, that nitrous acid and the spirit of nitric æther occasion an extraordinary decomposition in these tinctures, separating the guaiacum into coagulated masses, and imparting to the whole an intense bluish green colour. I find that *chlorine* has the same effect;† but the sulphuric and muriatic acids produce no disturbance. If equal parts of quick-lime and powdered guaiacum be rubbed together, and a quantity of water be poured over them, and the mixture be allowed to stand until it becomes fine, we shall obtain a solution of this substance, which will mix in any proportion with aqueous vehicles without decomposition, and to which the aromatic spirit of ammonia may be subsequently added with effect.

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* COURT PLASTER, *Sticking Plaster*. The composition of this preparation, which has been inadvertently omitted under the article Emplastra, is as follows. Black silk is strained and brushed over ten or twelve times, with the following preparation. Dissolve ℥ss of *Benzoin* in f℥vj of rectified spirit; in a separate vessel, dissolve ℥j of Isinglass in Oss of water; strain each solution, mix them, and let the mixture rest, so that the grosser parts may subside; when the clear liquor is cold, it will form a jelly, which must be warmed before it is applied to the silk. When the Plaster is quite dry, in order to prevent its cracking, it is *finished off* with a solution of *Terebinth: Chia*, ℥iv, in *Tinct: Benzoes* f℥vj.

† The change of colour which Guaiacum undergoes by admixture with other bodies, not only affords a test by which we may appreciate its purity, but at the same time it becomes a reagent by which we may assay the virtues of other vegetable substances. According to the experiments of M. Taddey and Rudolphi, it appears that GUAIACUM in powder, is an excellent test for vegetable gluten, forming with it a fine blue colour, whence it offers the means of determining the quality of wheat flour. From the experiments of M. Planche, it moreover appears that there is a series of vegetable roots which, when fresh, are capable of producing a blue colour, if introduced into an alcoholic solution of Guaiacum: so that we may hereafter be furnished with a chemical test that will at once appreciate their freshness, which is undoubtedly one of the greatest desiderata of pharmaceutical science.

A communication has lately appeared from Mr. A. T. Thomson, in which he proposes Guaiacum as a test for the freshness of Colchicum. I have, however, never been able to succeed with it, to my satisfaction.

Tinctura Toluiferæ Balsami. E.D. This is only useful as an adjunct, to impart agreeable flavour and fragrance to other remedies.

The above tinctures, when added to water, are instantly decomposed, the practitioner must therefore remember that when he prescribes them in aqueous vehicles, it will be necessary to direct them to be triturated with some viscid liquor, as mucilage, previous to the addition of the water, in order to suspend the resinous precipitate.

2. *Tinctures prepared with Spirit above Proof.*

Tinctura Aloes Composita. L.D. *Elixir Proprietatis.* P.L. 1720. Tincture of Myrrh is the menstruum of the Aloes in this preparation, to which Saffron is added. *Dose*, fʒj to fʒij. *Form.* 16, 97.

Tinctura Myrrhæ. L. The strength of the spirituous solvent has been very judiciously increased in the *Editio Altera* of the London Pharmacopœia, by which means a brighter tincture is obtained. It is rarely used except in astringent and detergent gargles, or as an external application to foul ulcers; diluted with water it presents us with an excellent lotion for spongy gums.*

3. *Tinctures prepared with Proof Spirit.*

Tinctura Angusturæ. D. See *Cuspariæ Cortex.*

Tinctura Aurantii. L.D. An agreeable adjunct to bitter infusions.

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* **Hudson's Preservative for the Teeth and Gums.** Equal parts of Tincture of Myrrh, Tincture of Bark, and Cinnamon water, to which are added Arquebusade and Gum Arabic.

Greenough's Tincture for the Teeth. The following receipt is given on the authority of Mr. Gray. Of *Bitter Almonds*, 2 oz. *Brasil Wood* and *Cassia Buds*, equal parts, half an ounce; root of the *Florentine Iris*, 2 dr.: of *Cochineal*, *Salt of Sorrel*, and *Alum*, equal parts, one drachm; *Rectified Spirit*, 2 pints; *Spirit of Horse Radish*, half an ounce.

Ruspini's Tincture for the Teeth. This consists of the root of the *Florentine Iris*, eight ounces; *Cloves*, one ounce; *Rectified Spirit*, two pints; *Ambergris*, one scruple.

Tinctura Calumbæ. L.E. A valuable stomachic. *Form.* 32, 35, 154, 155, 159.

Tinctura Camphoræ Composita. *Tinctura Opii Camphorata.* P.L. 1787. *Elixir Paregoricum.* P.L. 1745. This preparation has undergone both change of name and composition in the last Pharmacopœia; its old name was thought improper on account of its similarity to that of *tincture of opium*, and the *oil of aniseed* has been omitted on account of its disagreeable flavour; still, however, these perpetual changes are most distressing; the tincture, as it is now prepared, is very different from that which has been so long and so generally sold under the name of *Paregoric Elixir*, and the chemist is therefore obliged to keep both the preparations, and to send the one or the other, according as it may be required by the old or new name. One fluid-ounce contains nearly two grains of Opium and of benzoic acid, and about one grain and a quarter of camphor. In *doses* of f℈j to f℈iij, it is anodyne.

Tinctura Capsici. L. It is an excellent stimulant. See *Capsici Baccæ.*

Tinctura Cardamomi Composita. L. An agreeable cordial. See *Form.* 47, 51.*

Tinctura Cascarillæ. L.D. It is added with much effect to different stomachic infusions. See *Form.* 33, 39, 41.

Tinctura Catechu. L.E.D. A warm and grateful astringent; very useful as an adjunct to cretaceous mixtures in diarrhœa, &c. See *Form.* 51, 52, 58.

Tinctura Cinchonæ. L.E.D. Used as an adjunct to the decoction or infusion of the bark. See *Form.* 126, 127.

Tinctura Cinchonæ Composita. This resembles the celebrated tincture of Huxham, and although it contains less cinchona than the simple tincture, yet from the addition of aromatics it is more grateful and stomachic.

Tinctura Cinnamomi. L.D. See *Form.* 101.

Tinctura Cinnamomi Composita. L.E.D. As this is a combination of aromatics with cinnamon, it is more grateful and stomachic than the simple tincture.

Tinctura Conii Maculati. E. As *Conein* is perfectly soluble in spirit, this tincture constitutes a very elegant and efficient form for the exhibition of *Hemlock;* I have frequently experienced its effects, when added to febrifuge mixtures, with satisfaction. The London college has not hitherto admitted it into the list of tinctures, which is to be regretted.

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* Solomon's Balm of Gilead. An aromatic tincture, of which Cardamoms form a leading ingredient, made with brandy. Some practitioners have asserted that *Cantharides* enter its composition.

Tinctura Croci. E.D. It has no medicinal use independent of its colour.

Tinctura Digitalis. L.E.D. It is a very useful form for the exhibition of this valuable plant. *Dose*, ♏x, cautiously increased. See *Digitalis Folia*, and *Form.* 32.

Tinctura Gentianæ Composita. L.E. An elegant stomachic bitter, but less eligible as a remedy than the infusion.

Tinctura Hellebori Nigri. This preparation was strongly advised by Dr. Mead, in uterine obstructions. *Dose*, ♏xxx to fʒj. See *Hellebori Radix*.

Tinctura Humuli. L.E. It is supposed to possess the tonic and narcotic properties of the hop. *Dose*, fʒss to fʒiij.

Tinctura Hyoscyami. L. This is a much more powerful narcotic than the preceding tincture; and it is not liable to affect the head, nor to produce that disturbance in the biliary secretions which so inevitably follows the use of opium. *Dose*, fʒss to fʒij.

Tinctura Jalapæ. L.E. As the activity of Jalap does not reside in any one principle, but depends upon the combination of its gum, extractive, and resin, *proof* spirit is of course its appropriate solvent; and the resulting tincture is therefore an active purgative, but it is rarely administered except as an *adjuvant* to cathartic combinations. *Dose*, fʒj to f℥ss. See *Form.* 70, 76.

Tinctura Kino. L.E.D. This is little else than a solution of *Tannin;* it is however less astringent than the tincture of Catechu. *Dose*, fʒj to fʒij.

Tinctura Lyttæ. L. *Tinct. Cantharides Vesicatoriæ.* E. *Tinct. Cantharides.* D. This tincture is highly stimulating, acting with great energy upon the urinary organs; it therefore offers a resource in gleets, fluor albus, incontinence of urine, &c. it has also proved serviceable as a highly stimulating diuretic, in cases of *Hydrops Ovarii.* See *Form.* 116. *Dose*, ♏x to fʒj, given in some demulcent infusion; it is likewise employed with advantage as a stimulating embrocation and rubefacient, in conjunction with *soap* or camphor *liniment.* Externally it has been used in the cure of Sinuses, and fistulous openings, in the proportion of three fluid-drachms to a pint of water.*

Tinctura Opii. L.E.D. This is at once a most convenient and elegant form for the exhibition of opium; ♏xix contain one grain of opium. See *Opium*, and *Form.* 5, 7, 8, 20, 28,

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* Matthew's Injection. This once celebrated remedy for Fistula in Ano, was nothing more than a diluted Tincture of Cantharides.

52, 75, 76, 107, 110, 117, 127, 136, 156, 172. As an external application, when rubbed upon the skin it produces anodyne effects, and it is said that these effects are very much increased by combining it with acetic acid; an *acetate of Morphia* is probably thus produced.

TINCTURA QUASSIÆ EXCELSÆ. E.D. The bitter principle of this root, *Quassin*, is completely extracted by proof spirit.

TINCTURA RHEI. L.E.D. Less purgative, but more astringent and aromatic than the infusion. That made with the *East Indian* variety, is of a deeper colour, with a tinge of brown.

TINCTURA RHEI COMPOSITA. L. A cordial used principally as an adjunct to saline purgatives. *Dose*, fʒvj to f℥j, to produce purgative effects; from fʒj to fʒij, to act as a stomachic.

The Edinburgh Pharmacopœia directs two compound tinctures of Rhubarb, for similar purposes, viz. *Tinct. Rhei et Aloes*, and *Tinct. Rhei et Gentianæ.*

TINCTURA SCILLÆ. L.E.D. *Dose*, ♏x to xxx. See *Form.* 65, 109, 139.

TINCTURA SENNÆ. L.E. *Dose*, fʒij to f℥j. See *Form.* 70.

TINCTURA SENNÆ COMPOSITA. E. In this tincture, the Senna is quickened by Jalap. *Dose*, fʒij to f℥j.*

TINCTURA SERPENTARIÆ. L.E.D. *Dose*, fʒj to fʒiij. It is principally employed as a stimulating adjunct to the infusion or decoction of Cinchona, in typhoid fevers. OFFICINAL PREP. *Tinct. Cinchon. comp. L.*

TINCTURA VALERIANÆ. L.D. It is only used as an adjunct to the infusion of Valerian.

TINCTURA VALERIANÆ AMMONIATA. L.D. This tincture is not more highly charged with the principles of the Valerian than the foregoing one, but as the ammonia corresponds with it in virtue, it is probably more powerful. *Dose*, fʒj to fʒij. See *Form.* 23, 25.

TINCTURA ZINGIBERIS. L.D. A highly stimulating preparation. See *Form.* 33.

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* DAFFY'S ELIXIR. This is the *Tinctura Sennæ Composita*, with the substitution of treacle for sugar candy, and the addition of aniseeds and elecampane root. Different kinds of this nostrum are sold under the names of DICEY'S DAFFY, and SWINTON'S DAFFY; but they differ merely in some subordinate minutiæ, or unimportant additions.

TINCTURA FERRI AMMONIATI. L.

As this is merely a spirituous solution of the *Ferrum Ammoniatum*, the title of tincture is improperly applied to it; it seems moreover to be a very superfluous preparation.

TINCTURA FERRI MURIATIS. L.E.D.

Qualities. *Colour*, brownish yellow; *Taste*, styptic; *Odour*, very peculiar. Chemical Composition. It is an alcoholic solution of muriate of iron; the iron being in the state of *per-oxide*. Incompatible Substances. *Alkalies* and their *carbonates; the infusions of astringent vegetables; mucilage of gum arabic:* by this latter substance it is precipitated in gelatinous flakes. Med. Uses. It is one of the most active preparations of iron which we possess, and it moreover appears to exert a specific influence upon the urinary organs. Mr. Cline informs us that ♏ x, given every ten minutes, until some sensible effect is produced, afford in dysuria speedy relief; in hemorrhage from the bladder, kidneys, or uterus, it acts as a powerful styptic. See *Form.* 35, 60, 97, 114. Externally, it is very efficacious in destroying venereal warts, either used alone, or diluted with a small portion of water. *Dose*, ♏ x to fʒss, or fʒj.*

TORMENTILLÆ RADIX. L.E.D.

Tormentilla Officinalis.

Tormentil Root.

Qualities. This root is knotty, externally blackish, internally reddish; *Odour*, slightly aromatic; *Taste*, austere and styptic. Chemical Composition. Its active matter is chiefly *Tannin*, and except galls and catechu, it appears to contain a larger proportion than any other vegetable astringent.† Solubility. Boiling water extracts all its virtues, as also does spirit. Incompatible Substances. *Solutions of Isinglass, the Salts of Iron; Alkalies* and *Alkaline Earths*. Med. Uses. It has been chiefly used in diarrhœa, and it is very efficacious in that, which is so frequently attendant on Phthisis. Dr. Fordyce recommends its union with Ipecacuan, by which combination, he observes, we shall astringe the vessels of the intestines, and at the same time relax those of the skin. Forms of Exhibition. In substance, or in decoction made by boiling ℥j of the root in oiss of water until reduced to oj. Dose, of the substance in powder, ʒss to ʒj; of the above decoction f℥j thrice a day. Officinal Prep. *Pulv. Cret. comp.* L.

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* De La Motte's Golden Drops. An Æthereal solution of Iron.

† It has, for this reason, been substituted for oak bark in the tanning of leather.

TOXICODENDRI FOLIA. L.E.

(Rhus Toxicodendron.)

Sumach Leaves, or *Poison Oak.*

Qualities. Its leaves are inodorous, but have a sub-acrid taste. Chemical Composition. Gallic acid, tannin, and a certain acrimonious matter, upon which the virtues of the plant depend, and which, according to Van Mons, is disengaged from the leaves in the state of gas during the night, or while they do not receive the direct rays of the sun. Med. Uses. Dr. Anderson of Hull introduced the leaves of this plant to notice, in whose hands they proved successful in several cases of Paralysis; the same results however have not been obtained by other physicians; the plant has therefore fallen into disuse, and might, in deference to public opinion, be removed from the materia medica.

TUSSILAGO. (Tussilago Farfara—*Folia*, *Flores.*)

Coltsfoot.[*]

This plant has been regarded as a powerful expectorant from the earliest ages; it is at present only valued for the mucilage which it affords; a handful of the leaves boiled in oij of water, until reduced to oj, will furnish, by the addition of a little sugar candy, a very grateful demulcent.

VALERIANÆ RADIX. L.E.D.

(Valeriana Officinalis. *Sylvestris.*)

Valerian Root.

Qualities. *Odour*, strong, peculiar, and unpleasant; *Taste*, warm, bitter, and sub-acrid. Chemical Composition. Extractive, gum-resin, fecula, tannin, and a peculiar essential oil which seems to contain camphor, and on which its virtues probably depend. Solubility. Its active matter is extracted by boiling water, alcohol, and the solutions of the pure alkalies. Incompatible Substances. *The salts of iron.* Med. Uses. It is antispasmodic, tonic, and emmenagogue ; and it is highly beneficial in those diseases which appear to be connected with a morbid susceptibility of the nervous system, as in hysteria, hemicrania, and in some species of epilepsy; and it would appear that its virtues in such complaints may be frequently increased by combining it with cinchona. Forms of Exhibition. The form of powder is the most effectual, and next to this a strong tincture made with proof spirit ; by decoction its powers are considerably impaired, and consequently the extract is an inefficient preparation. Dose, of the powder ℈j to ʒj ; when the flavour disgusts, the addition of a small portion of *mace* or *cinnamon* will be found to disguise it. See *Form.* 25, 31, 38. Officinal Prep. *Infus. Valerian.* D. *Tinct. Valerian.* L.D. *Tinct. Valerian. ammoniat.* L.D. Adulterations. The roots of a species of *crowfoot* are sometimes mixed with those of valerian; they may be distinguished by a caustic taste on chewing them ; the roots have also often a disagreeable smell from the urine of cats, who are allured and delighted by their odour ; and they are sometimes inert, from not having been taken up at a proper season, or from not having been carefully preserved.

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[*] British Herb Tobacco. The basis of which is *Coltsfoot;* this appears to have had a very ancient origin, for the same plant was smoked through a reed in the days of Dioscorides, for the purpose of promoting expectoration. and was called by him βηχιον, from βηξ, tussis, whence *Tussilago*.

Essence of Coltsfoot. For an account of this nostrum. see *page* 83.

VERATRI RADIX. L.E. (Veratrum Album.)

HELLEBORUS ALBUS. D.

White Hellebore Root.

Qualities. *Odour*, strong, and disagreeable; *Taste*, bitter, and very acrid ; by drying, the odour is dissipated, and in this state it is found in the shops. Solubility. Its active principles are soluble in water, alcohol, and the alkalies. Chemical Composition. Pelletier and Caventou have lately discovered in this vegetable a new alkaline principle, white, crystalline, and acrid, to which they have given the name of *Veratria :* it appears to exist in combination with gallic acid. Med. Uses. The effects of this root are extremely violent and poisonous; the ancients employed it in various obstinate cases, but they generally regarded it as their last resource ; it acts as a violent emetic and cathartic, producing bloody stools, great anxiety, tremors, and convulsions. Etmuller says, that the external application of the root to the abdomen, will produce vomiting; and Schroeder observed the same phenomenon to take place in a case where it was used as a suppository, and its juice has been applied to the purpose of poisoning arrows; notwithstanding these effects, however, the veratrum has been very safely and successfully administered in cases of mania, epilepsy, lepra, and gout:* but the most ordinary use of white hellebore is as a local stimulant; as an adjunct to errhine powders; or in the form of decoction, as a lotion; or mixed with lard, as an ointment in scabies,† and herpetic eruptions: great caution however is required in its application, for several authors affirm that as an errhine, it has caused abortions, floodings which could not be restrained, and fatal hemorrhages from the nose. Dose, gr. iij to v, obtunded by the addition of twelve times its weight of starch, a pinch of which may be taken for several successive evenings; for internal administration it ought not to exceed gr. ij. Officinal Prep. *Decoct. Veratri.* L. *Tinct. Veratri albi.* E. *Unguent. Veratri.* L.† *Unguent. Sulphur. comp.* L.

VINUM. *Wine.*

The term wine is more strictly and especially applied to express the fermented juice of the *Grape*, although it is generally used to denote that of *any* sub-acid fruit. The presence of *Tartar* is perhaps the circumstance by which the grape is most strongly distinguished from all the other sub-acid fruits that have been applied to the purpose of wine making. The juice of the grape, moreover, contains within itself all the principles essential to vinification, in such a proportion and state of balance as to enable it at once to undergo a regular and complete fermentation, whereas the juices of other fruits require artificial additions for this purpose; and the scientific application and due adjustment of these means, constitute the art of making wines.* It has been remarked, that all those that contain an excess of malic acid are of a bad quality, hence the grand defect that is necessarily inherent in the wines of this country, and which leads them to partake of the properties of cider, for in place of the *tartaric*, the *malic* acid always predominates in our native fruits.

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* In the first edition of this work, I stated the probability of the *Veratrum* being the active ingredient of the Eau Medicinale, and, upon the authority of Mr. James Moore, I inserted a formula for its preparation; subsequent inquiry, however, has shown the fallacy of this opinion; but the fact of the medicinal efficacy of the *Veratrum*, when combined with opium, in the cure of gout, remains incontrovertible. One of the two *Sweating Powders* of Ward, was a combination of the *Veratrum* and *Opium*. It is certainly a very singular coincidence, that recent experiments should have shown that the active principle of colchicum is identical with that which gives efficacy to the hellebore, viz. *Gallate of Veratria.*

† Edinburgh Ointment.—The principal ingredients of which are the *White Hellebore* and *Muriate of Ammonia.*

The characteristic ingredient of all wines is *Alcohol*, and the quantity of this, and the condition or state of combination in which it exists, are the circumstances that include all the interesting and disputed points of medical inquiry. Daily experience convinces us that the same quantity of alcohol, applied to the stomach under the form of natural wine, and in a state of mixture with water, will produce very different effects upon the body, and to an extent which it is difficult to comprehend; it has, for instance, been demonstrated that Port, Madeira, and Sherry, contain from one-fourth to one-fifth their bulk of alcohol, so that a person who takes a bottle of either of them, will thus take nearly a pint of alcohol, or almost a pint of pure brandy! and moreover that different wines, although of the same specific gravity, and consequently containing the same absolute proportion of spirit, will be found to vary very considerably in their intoxicating powers; no wonder then that such results should stagger the philosopher, who is naturally unwilling to accept any tests of difference from the nervous system, which elude the ordinary resources of analytical chemistry; the conclusion was therefore drawn, that alcohol must necessarily exist in wine in a far different condition from that in which we know it in a separate state, or in other words, that its elements only could exist in the vinous liquor, and that their union was determined, and consequently alcohol produced, by the action of distillation. That it was the *product*, and not the *educt* of distillation, was an opinion which originated with Rouelle, who asserted that alcohol was not completely formed, until the temperature was raised to the point of distillation; more lately the same doctrine was revived and promulgated by Fabbroni, in the memoirs of the Florentine Academy. Gay Lussac has, however, silenced the clamorous partisans of this theory, by separating the alcohol by distillation at the temperature of 66° *Fah.* and by the aid of a *vacuum*, it has since been effected at 56°: besides, it has been shown, that by precipitating the colouring matter and some of the other elements of the wine by *sub-acetate of lead*, and then saturating the clear liquor with *sub-carbonate of potass*, the alcohol may be completely separated without any elevation of temperature; and by this ingenious expedient Mr. Brande has been enabled to construct a table exhibiting the proportions of combined alcohol which exist in the several kinds of wine: no doubt therefore can remain upon this subject, and the fact of the difference of effect, produced by the same bulk of alcohol, when presented to the stomach in different states of combination, adds another striking and instructive illustration to those already enumerated in the course of this work, of the extraordinary powers of chemical combination in modifying the activity of substances upon the living system. In the present instance, the alcohol is so combined with the extractive matter of the wine, that it is probably incapable of exerting its full specific effects upon the stomach, before it becomes altered in its properties, or, in other words, *digested:* and this view of the subject may be fairly urged in explanation of the reason why the intoxicating effects of the same wine are so liable to vary in degree, in the same individual, from the peculiar state of his digestive organs at the time of its potation.* Hitherto we have only spoken of *pure* wine, but it is essential to state that the stronger wines of Spain, Portugal, and Sicily, are rendered marketable in this country by the addition of *Brandy*, and must consequently contain *uncombined* alcohol, the proportion of which, however, will not necessarily bear a ratio to the quantity added, because, at the period of admixture, a renewed fermentation is produced by the scientific vintner, which will assimilate and combine a certain portion of the foreign spirit with the wine: this manipulation, in technical language, is called *fretting-in.* The free alcohol may, according to the experiments of Fabbroni, be immediately separated by saturating the vinous fluid with *sub-carbonate of potass*, while the combined portion will remain undisturbed: in ascertaining the fabrication and salubrity of a wine, this circumstance ought always to constitute a leading feature in the inquiry; and the tables of Mr. Brande would have been greatly enhanced in practical value, had the relative proportions of *uncombined* spirit been appreciated in his experiments, since it is to *this*, and not to the *combined* alcohol, that the injurious effects of wine are to be attributed. "It is well known," observes Dr. Macculloch, "that diseases of the liver are the most common, and the most formidable of those produced by the use of *ardent* spirits; it is equally certain that no such disorders follow the intemperate use of *pure* wine, however long indulged in: to the concealed and unwitting consumption of spirit, therefore, as contained in the wines commonly drunk in this country, is to be attributed the excessive prevalence of those hepatic affections which are comparatively little known to our continental neighbours." Thus much is certain, that their ordinary wines contain no alcohol, but what is disarmed of its virulence, by the prophylactic energies of combination.

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* For an account of which the reader is referred to a most ingenious and interesting Essay by Dr. Macculloch, entitled "Remarks on the Art of making Wine, with suggestions for the application of its Principles to the improvement of Domestic Wines."

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* This may also explain why bitters, under certain circumstances, have been found to counteract the effects of wine, as in the instance of the "*Poculum Absinthiatum*," of which the ancients entertained so high an opinion.

The odour, or *bouquet*, and flavour which distinguish one wine from another, evidently depend upon some volatile and fugacious principle, soluble in alcohol; this in sweet and half-fermented wines, is immediately derived from the fruit, as in those from the *Frontignan* and *Muscat* grapes; but in the more perfect wines, as in *Claret*, *Hermitage*, *Rivesaltes*, and *Burgundy*, it bears no resemblance to the natural flavour of the fruit, but is altogether the product of the vinous process; and in some wines it arises from the introduction of flavouring ingredients, as from almonds in Madeira wines, as well as in those of Xeres and Saint Lucar, and hence their well-known nutty flavour. Among the ancients it was formerly, and in modern Greece it is to this day, the fashion to give a resinous flavour, by the introduction of Turpentine into the casks.* These wines are supposed to assist digestion, restrain ulcerous and other morbid discharges, provoke urine, and strengthen the bowels; but Dioscorides also informs us that they were known to produce vertigo, pain in the head, and many evils not incidental to the same quantity of vinous liquor when free from such admixtures.†

Wines admit of being arranged into four classes.

1. Sweet Wines; which contain the greatest proportion of extractive and saccharine matter, and generally the least ardent spirit, though this is often rather disguised than absent; as in these wines, a proportion of sugar has remained unchanged during the process of vinification, they must be considered

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* "Resinata bibis vina, Falerna fugis.—*Martial*.

This custom explains the origin and meaning of the *Thyrsus* of Bacchus, which appears to have been a spear entwined with leaves or a fillet, and surmounted with a Fir cone.

Pliny, (lib: 14. c. 14.) mentions a Wine under the name of *Myrrhina*, which was so called on account of its being impregnated with Myrrh.

† See *Dioscorides*, lib. 5, c. 35, 36, 37, 38, 39.

as the results of an imperfect fermentation, and are in fact mixtures of wine and sugar; accordingly, whatever arrests the progress of fermentation, must have a tendency to produce a sweet wine; thus boiling the *must* or drying the fruit will, by partially separating the natural leaven, and dissipating the water, occasion such a result as is exemplified by the manufacture of the wines of Cyprus, the *vino cotto* of the Italians, and the *vinum coctum* of the ancients, by that of *Frontignac*, the rich and luscious wines of *Canary*, the celebrated *Tokay*, *Vino Tinto*, (Tent of Hungary) the Italian *Montefiascone*, the Persian *Schiras*, the *Malmsley wines of Candia*, *Chio*, *Lesbos*, and *Tenedos*, and those of the other islands of the Archipelago. The wines of the ancients, as Chaptal observes, were so concentrated by boiling, that they rather deserve the name of extracts or syrups, than that of wines; they must have been very sweet, and but little fermented; apparently, to remedy this, they were kept for a great length of time: according to Aristotle and Galen, seven years was the shortest period necessary for keeping wine before it was fit to drink, but wines of a century old were not uncommon at the tables of the luxurious citizens of ancient Rome, and Horace boasts of his drinking *Falernian*, born as it were with him, or which reckoned its age from the same consuls.*

2. Sparkling or Effervescing Wines, as Champagne, are indebted for their characteristic properties to the presence of

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* "O Nata mecum consule Manlio.—*Od: xxi. Lib:* 3.

The Odes of Horace abound with manifestations of the same taste, thus,

"I pete ———————————
Et Cadum Marsi memorem duelli."—*Od: xiv. Lib:* 3.

Here Horace sends his Slave for a cask of the wine on which the Marian war was recorded, and which must therefore have been sixty-eight years old.

In ode xxviii. book 3, we find him calling for

"Bibuli Consulis amphoram."

Now as the poet was born in the Consulate of Manlius, as above stated, which happened A.U. c. 688, and Bibulus was Consul in 694, the wine must have been hoarded from the time Horace was six years of age.

Wine however might, according to the opinion of our Poet, be too old; he terms wine of this description "*Languidiora Vina*," and Plautus compares old wine which has lost its relish and strength, to a man who has lost his teeth by age, "*Vinum vetustate edentulum.*"

Nestor's wine was eleven years old. *Od. y.* 390.

The Romans had their wine cellars at the top of their houses; thus Horace,

"*descende* Corvino jubente.

The object of such an arrangement was that the wine might ripen sooner by the smoke, for their fires were made in the middle of their rooms, with an opening above to let out the smoke, which is described as rolling to the top of the house, in the Eleventh Ode of the Fourth Book.

"Rotantes vertice fumum."

carbonic acid; they rapidly intoxicate, in consequence of the alcohol, which is suspended in, or combined with this gas, being thus applied in a sudden and very divided state to a large extent of nervous surface; for the same reason, their effects are as transitory as they are sudden.

3. **Dry and Light.** These are exemplified by the more esteemed German wines, as *Hock*, *Rhenish*, *Mayne*, *Moselle*, *Necker*, and *Elsass*, and those highly flavoured wines, *Burgundy*, *Claret*, *Hermitage*, &c. They contain a very inconsiderable degree of ardent spirit, and combine with it the effect of an acid.

4. **Dry and Strong**, as *Madeira*, *Port*, *Sherry*, &c. The name *Sec*, corruptly written Sack, signifies dry; the *Sec* wine prepared at Xeres* in Spain, is called according to our orthography, *Sherris*, or *Sherry*. In the manufacture of Sherry, *Lime*† is added to the grapes, a circumstance, observes Dr. Macculloch, apparently conducive to its well-known dry quality, and which probably acts by neutralizing a portion of *malic* or *tartaric* acid.

By the adulteration and medication of wines, three principal objects are attempted, viz. 1. *To give them strength*, which is effected by adding any ardent spirit; but the wine is slowly decomposed by it. 2. *To perfect or change their colour.* It is very usual to change *white* wines, when they have grown brown or rough, into *red* wines, by means of sloes, or other colouring matter. 3. *To lessen, or remove their acidity.* It is well known that lead in different forms has frequently been employed for this purpose; the practice however is attended with most dangerous consequences; but which Dr. Macculloch is inclined to believe has been over-rated, since the compounds which this metal forms with the tartaric and malic acids are insoluble; but against this argument, the decisive results of experience may be opposed, and Fourcroy conceived that by the addition of lead, a soluble triple salt, an *aceto-tartrate of lead*, was produced. The fraud may be easily detected by the test* invented by Dr. Hahnemann. The ancients, it appears, were acquainted with this property in lead, for according to Pliny, the Greeks and Romans improved the quality of their wines by immersing a plate of lead in them.† Wine, as a pharmaceutical agent, is employed to extract several of the principles of vegetables, and to dissolve certain mineral bodies: as a solvent, however, it is liable to many serious objections, as inequality of strength, and uncertainty of composition; thus sound and perfectly fermented dry wine, as *Sherry*, is frequently unable to dissolve iron, while tartarized antimony is instantly decomposed by every other. As a menstruum, to obtain an extract, it is quite inadmissible on account of the residuum which it leaves by evaporation. From such considerations, the London College have at length determined to substitute a weak spirit, on several occasions, for the wine formerly employed, although the term "*Vina*" will still be retained in their Pharmacopœia.

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* *Ξηρος*, signifies *dry*. This is a curious coincidence.

† The *Sack* of Shakspeare was probably *Sherry;* a conjecture which receives additional strength from the following passage.

Falstaff.—"You rogue, here's *lime* in this Sack too: There is nothing but roguery to be found in villanous man: yet a coward is worse than a cup of sack with *lime* in it; a villanous coward."

Huldricke Van Speagle, in his "Famous Historie of most Drinks," says "Sack is no hippocrite, for any man who knows what an Anagram is will confesse that it is contained within the litteral letters and limmits of its own name, which is to say, CASK, i. e. SACK." See Taylor's Translation of the Work of the painful and industrious Huldricke Van Speagle, a grammatical Brewer of Lubeck. A.D. 1637.

Vinum Aloes. L.E.D. This solution contains all the virtues of the Aloes, and is more agreeable than the tincture. It is a warm stomachic in doses fʒj to fʒij, and a stimulating purgative when given from f℥j to f℥ij.

Vinum Colchici. This medicated wine is made as follows: Take of the recent bulb of the Colchicum, sliced and bruised, lbj; of Sherry wine f℥xij; let them infuse for ten days, and filter for use. There is perhaps no form better calculated to ensure the medical effects of this plant than the one we are now considering. Its dose may be stated to be from ♏xx to fʒiss. The virtues of Colchicum have been already noticed, see *Colchici Radix*.

Vinum Ferri. L.D. When prepared according to the London College (P.L. 1809.) each pint is stated to contain 22 grains of the red Oxide of Iron; the strength however must in every case depend upon the quantity of *tartar* contained in the wine. Very dry Sherry is frequently incapable of acting upon the iron until a small proportion of Cream of Tartar be added to it; would it not therefore be advisable to direct at once a given portion of *ferrum tartarizatum* to be dissolved in wine? The Dublin formula is more eligible than that of the London Pharmacopœia, since it directs the use of *Rhenish* wine instead of Sherry as a solvent, and iron *wire* in preference to iron *filings;* this last circumstance is important, for the purest iron can only be drawn, and this is most easily acted upon by the super-tartrate of potass. *Med. Uses.* It is the least unpleasant of all the preparations of iron, and its medicinal activity is supported by the testimony of ages, for it is one of the oldest preparations with which we are acquainted. *Dose*, f℥j to f℥ss. In the next London Pharmacopœia we shall probably have a spirituous solution of *Tartarized Iron*, as a substitute for the above preparation.

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* Expose equal parts of sulphur and powdered oyster-shells to a white heat for fifteen minutes, and when cold, add an equal quantity of cream of tartar; these are to be put into a strong bottle with common water to boil for an hour; and the solution is afterward to be decanted into ounce phials, adding 20 drops of muriatic acid to each. This liquor will precipitate the least quantity of lead from wines in a very sensible black precipitate. As iron might be accidentally contained in the wine, the muriatic acid is added to prevent its precipitation.

† Lead will not only correct the acidity of wines, but remove the rancidity of oils: a property which is well known to Painters, and which affords an expedient for making an inferior olive oil pass for good.

Vinum Ipecacuanhæ. L.E.D. The virtues of this root are completely extracted by Wine. *Dose* as an emetic from f℥ij to f℥ss; as a diaphoretic from ♏ xx to xl. *See Form.* 63, 137.

Vinum Opii.* L.E. This is a vinous solution of the *extract* of Opium combined with various aromatics, which are supposed to modify the effects of the opium, while by the substitution of the extract for the crude opium, it is considered as being less likely to disturb the nervous system. I submit whether the views offered under the history of Wine, respecting the relative effects of combined and uncombined Alcohol, might not lead us by analogy to prepare a more efficient *vinum opii*, and a preparation less likely to affect the stomach: by adding the opium to the wine during its state of fermentation, it would enter into intimate union with its elements, in the same way that brandy is incorporated by the technical manipulation of *fretting in:* this suggestion is also sanctioned by the generally acknowledged superiority of the *Black Drop*, which I have little doubt is indebted for its peculiar efficacy to the state of combination in which the *acetate of morphia* exists in the vinum menstruum. The present preparation is nearly analogous to the celebrated *Liquid Laudanum*† of Sydenham, and its degree of narcotic power is nearly the same as that of the ordinary tincture.

Vinum Veratri. L. Since the discovery of the real nature of the *Eau Medicinale*, this preparation has fallen into disuse, and might be removed to make room for the *Vinum*

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* Ford's Laudanum. This is similar to the *Vinum Opii*, with the substitution only of a dilute spirit for the wine.

† *Laudanum.* Paracelsus first bestowed the term Laudanum upon a preparation of Opium, *a* Laudata *ejus efficacia, quasi* Laudatum *medicamentum.*

Colchici. It is however a singular circumstance that both these preparations should owe their medicinal powers to the same elementary principle, viz. *Veratria.*

ULMI CORTEX. L.E.D. (Ulmus Campestris.)
Elm Bark.

Qualities. *Odour*, none; *Taste*, slightly bitter and mucilaginous. **Chemical Composition.** Gum, extractive, gallic acid, and super-tartrate of potass. **Solubility.** Water is its appropriate solvent. **Med. Uses.** It has been commended in herpetic eruptions, but in the hands of Dr. Willan and others it has not proved successful; it is one of those articles that might be discarded from our Pharmacopœia with much propriety. **Officinal Prep.** *Decoct: Ulmi.* L.D.

UNGUENTA. L.E.D. *Ointments.*

These are unctuous substances analogous to *Cerates* except in consistence, which is much less firm, and scarcely exceeds that of butter: formerly, ointments were numerous and complicated in their composition, and surgeons adapted with much technical formality different ointments to answer different indications; this practice however has undergone a very judicious reform, and it is now well understood that *in general* all that is required in an ointment is a suitable tenacity and consistence, to keep the parts to which it may be applied soft and easy, and at the same time to exclude from them the atmospheric air; in some cases, however, these simple compositions are made the *vehicles* for more active remedies, as in the following preparations, *viz.*

Unguentum Elemi Compositum. L. The elemi and turpentine in this ointment, render it stimulant and digestive.

Unguentum Hydrargyri Fortius. L. The precise nature of this compound* does not appear to have been known, until the late researches† of Mr. Donovan, (*Annals of Philosophy*,

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* According to the experiments of *M. Vogel*, *Annales de Chimie*, *t.* lxiv. *p.* 220) this ointment is nothing more than metallic mercury mixed with grease, the division of which has been carried to such an extent as to impart a blackish colour to the mixture.

† It is to be hoped that a quantity of the ointment will be prepared according to these views, and be submitted to a more extended series of experiments. The oxide may be procured by decomposing *Calomel* by a solution of pure potass, or by pouring a solution of the nitrate of mercury into a caustic alkaline solution: this oxide should be at first triturated with a little lard, in the

November, 1819,) which promise to lead to a more uniform, efficacious, and economical mode of preparing it: for they* show that in the officinal ointment, the mercury exists in two different conditions—in the state of metal, *mechanically mixed*, as asserted by Vogel, and in that of an oxide, *chemically combined* with the lard, and that the medicinal activity of the ointment exclusively resides in this latter portion, the presence of metallic mercury not only being useless but injurious, by obstructing the absorption of the active compound of the oxide. Mr. Donovan accordingly formed a direct chemical combination, by continually agitating together lard and black oxide of mercury at the temperature of 350° *Fah.* for two hours. At the end of the process, it appeared that every ounce of lard had dissolved, and combined with, 21 grains of oxide; and from the trials which have been made respecting its activity, it would seem to be as efficient as the officinal ointment, and moreover that it may be introduced by inunction in one-third of the time. The investigation is highly important, for it not only offers the means of preparing a mercurial ointment more economically, but one more active and manageable, and less liable to that uniformity in strength which must always attend a preparation in which so much labour is required for its completion; for independent of that variation in strength which will arise from an imperfect triture, it is by no means an uncommon practice to use chemical means, which are not admissible, to facilitate the process, such as the addition of *Sulphur*, which is found to abridge very considerably the labour requisite for the extinction of the mercury, but it converts a portion of the metal into a *Sulphuret*, and diminishes the power of the unguent. There is, however, a method of facilitating the process, which is not liable to any apparent objection, but the theory of its operation is obscure; it consists in adding to the half prepared ointment a portion of that which

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cold, to make the penetration complete, taking care that the lard be quite free from common salt, or else *Calomel* will be the ultimate result: the mixture is then to be submitted to the action of heat, and it is very important to attend to the necessary temperature, for at 212° the oxide and lard will not unite, at 600° the oxide will be decomposed and the mercury volatilized, at 500° and 400° the oxide is partially decomposed, some red oxide being formed and mercury reduced; the proper temperature is between 300° and 320°, at which it should be maintained for an hour, and the ointment should be stirred until cold.

* Four ounces, *troy*, of mercurial ointment, prepared six months before, were kept at 212°, when it separated into two distinct strata, viz. the *upper* one, which was light gray, and extremely active as a medicine, and the *under* one, which upon being triturated with magnesia, yielded a large proportion of metallic mercury, and which was not found to possess any activity.

has been long kept; which appears to act as a *leaven* to the whole mass.

The following table exhibits the relative quantity of mercury contained in each of the different ointments directed by the British Pharmacopœiæ, and in that prepared according to the process of Donovan.

One Drachm of the Lond:	*stronger ointment* contains of Mercury	30 grs.
	weaker ointment - - - -	10 —
of the Edinb:	*common ointment* - - - -	12 —
of the Dub:	*stronger ointment* - - - -	30 —
	weaker ointment - - - -	20 —
of that prepared according to Donovan	- - -	$2\frac{1}{2}$ —

Mercurial ointment furnishes the most prompt, and least exceptionable mode of impregnating the system. The external method of administering mercury, says Mr. John Hunter, is always preferable to the internal, because the skin is not nearly so essential to life as the stomach, and therefore is capable in itself of bearing much more than the stomach. The inunction is generally performed by rubbing ʒss to ʒj on some part of the body where the cuticle is thin, generally on the inside of the thigh, except, perhaps, in cases of chronic hepatitis, when it is more usually applied to the region of the liver, care being taken that the friction is continued until every particle of the ointment disappears; and for obvious reasons the operation ought if practicable to be performed by the patient himself. Where it has been an object to saturate the system with mercury as quickly as possible, I have witnessed the advantage of confining, by means of slips of bladder, a drachm of mercurial ointment in each axilla, in addition to mercurial friction. Camphor, turpentine, and other stimulants have been sometimes added to the ointment, with a view of promoting its absorption; this, however, is an erroneous practice, since these acrid ingredients soon produce pustules on the skin, which prevent the continuance of the friction; the warm bath is a more certain, and less objectionable *adjuvant*, many practitioners therefore advise the body to be immersed in a warm bath, once and again before the course is commenced, and to repeat it once or twice a week during its continuance: the length of time to be employed in a course of mercury, and the quantity to be given, are circumstances that must in every case be left to the discretion of the practitioner. Mercury, when introduced into the body, acts as a powerful stimulant, and pervades every part of the system hence it is the most powerful evacuant belonging to the Materia Medica; from its stimulant operation, exerted directly or indirectly, we are able to explain its utility in the cure of disease, and it may be made to act according to management and circumstances, as to tonic, antispasmodic, diuretic, cathartic, sialogogue, emmenagogue, or alterative; but its most important operation is that displayed in removing the diseases induced by the syphilitic poison, although its *modus operandi* is still buried among the many other arcana of physic. The mode of directing and controlling the influence of mercury in the cure of the venereal disease, is now very generally understood, and it is to be hoped that a full confidence in its antisyphilitic powers is as universally maintained, in spite of the late opinions which tend to depreciate its value and to question its necessity; there is, however, no advantage to be gained, as was once imagined, by exciting profuse salivation. On its next important application, that of curing chronic affections of the liver, and dropsy, a remark which has been suggested to me by the results of practice, may not be unacceptable. I think I have generally observed, that when the remedy has been pushed to such an extent as to excite the salivary glands to excessive secretion, the urinary organs cease to participate in its stimulating action, and *vice versa*, for the mouth is rarely affected when the mercury runs off by the kidneys; this may suggest a precaution of some practical moment in the treatment of dropsy, and it will be generally judicious to accompany the administration of this metal with certain diuretics in order to direct its operation to the kidneys;* and it would seem that for such an object those diuretic medicines should be preferred that act *primarily* on the organs, as alkalies and their combinations, squill, &c.: the success of such a plan of treatment will also depend greatly upon the exact period at which these remedies are administered; it will, for instance, be right to wait until the system is, to a certain degree, under mercurial influence. It is hardly necessary to observe, that if the mercury runs off by the bowels, we shall be deprived of all, or of a great share of, the benefit to be expected. In certain cases, the lymphatic vessels seem to resist the admittance of mercury, and to refuse the conveyance of it to the general circulation: I have already thrown out some vague hints upon the subject, in the first volume of this work (p. 192,) and I must refer the reader to some farther remarks, which I apprehend bear upon this question under the following article.

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* Whenever it is our object to direct the mercurial impression to any particular organ, we should if possible rouse its excitability by some specific stimulus. An exception, however, to this doctrine would seem to offer itself in the fact, that children at the period of dentition are not readily salivated; *a priori*, we should have certainly supposed that a predisposition to a flux of saliva, would have produced a contrary effect. As it is, we can only conclude that those organs are not disposed to take on any action that may be incompatible with, or adverse to, that of dentition.

UNGUENTUM OXIDI HYDRARGYRI CINEREI. E. This consists of a mixture of *one part* of gray oxide of mercury, and *three parts* of axunge; it was reasonable to suppose, *a priori*, that as the whole of the mercury in this ointment is oxidized, its adoption would supersede the necessity of the labour required for the preparation of the common mercurial ointment, and at the same time afford a combination of equal if not superior efficacy; but experience has not justified the conclusion, for it has been found to possess little or no activity; the consideration of it is therefore introduced into this work, not on account of its utility, but as an object upon which I may pause with advantage, to offer those observations which its history is so well calculated to call forth and illustrate. The circumstance which renders this preparation inert, will now receive a satisfactory explanation from the experiments of Mr. Donovan, as related in the preceding article; in short, it is a *mechanical mixture*, instead of a *chemical combination;* and I beg again to urge the importance of this distinction, and to offer the present example as a farther illustration of the views I have already submitted upon the subject. By subjecting this ointment for some hours to a heat of 300°, it would without doubt become an active preparation. It is probable that the lymphatics offer less resistance to the ingress of a mineral body into the system when it is presented to them in combination with some animal substance, which must alone be regarded as their peculiar stimulus, and the only matter which they are destined perpetually to receive and convey; for the same physiological reason, the lacteals may probably take up iron with greater readiness when in combination with vegetable matter, than when introduced into the stomach in a more purely mineral form.

UNGUENTUM HYDRARGYRI MITIUS. L. This weaker preparation is sometimes preferred, as it irritates the skin less; it is however principally used as a topical dressing to venereal sores, and as an application to kill vermin on the body.

UNGUENTUM HYDRARGYRI NITRATIS. L.E.D. vulgo *Citrine Ointment*. It is stimulant, detergent, and alterative; when diluted with an equal quantity of simple ointment or almond oil, it may be almost regarded as a specific in ophthalmia tarsi, smeared upon the cilia every night at bedtime.

Unguentum Hydrargyri Nitrico-oxydi. L. An excellent stimulant application, well adapted for giving energy to indolent ulcers. If mixed with any ointment containing resin, it loses its red colour, passing through olive green to black, which depends upon the conversion of the *red* into the *black* oxide of mercury.

Unguentum Hydrargyri Præcipitati Albi. L. Stimulant and detergent.

Unguentum Lyttæ. L. As the active ingredient in this ointment is derived from an infusion of the Lyttæ, it is extremely mild, and frequently inefficacious; the *ceratum lyttæ* furnishes a more certain application.

Unguentum Picis Liquidæ. L.E.D. *Tar Ointment.* This ointment has been much extolled for the removal of tetter, and for the cure of tinea capitis.

Unguentum Resinæ Nigræ. L. olim, *Ung. Basilicum nigrum.* Digestive and stimulant.

Unguentum Sambuci. L.D. It possesses no advantage over the simple ointment.

Unguentum Sulphuris. L.E.D. This ointment is a mechanical mixture of Lard and Sulphur, although it would appear that a small proportion of the latter exists also in a state of chemical combination. Med. Uses. A specific in the itch. Dr. Bateman proposes a combination, equally efficacious, but which has not the same disagreeable smell; *viz.* "Take of sub-carbonate of potass, *half an ounce;* rose water, *one ounce;* red sulphuret of mercury, *one drachm;* essential oil of Bergamot, *half a fluid drachm;* sublimed sulphur, hog's lard, of each *eleven ounces.* Mix them."

Unguentum Sulphuris Compositum. L. More stimulating than the simple ointment, from the addition of white hellebore; it is frequently found to excite too much irritation.

Unguentum Veratri. L.D. It is used for the cure of scabies, but is less certain than the ointment of sulphur.

Unguentum Zinci. L.E.D. Astringent and stimulant; very beneficial in some species of ophthalmia, smeared upon the tarsi, every night.*

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* Bailey's Itch Ointment. This is a very complicated combination; containing *Nitre*, *Alum*, *Sulphate of Zinc*, and *Cinnabar*, made into an ointment with Olive oil and Lard, and perfumed with the essential oils of *Anise Seeds*, *Origanum*, and *Lavender;* and coloured with Alkanet root.

The Indians use an ointment in inveterate itch, which is said to prove very successful, and consists of finely powdered *Cocculus Indicus* mixed with a little warm Castor oil.

Very efficient preparations may be also constructed by adding together equal weights of lard and narcotic vegetable powders, as those of *Conium*, *Digitalis*, *Belladonna*, &c.

UVÆ URSI FOLIA. L.E.D. (Arbŭtus Uva Ursi.)

Uva Ursi, *Bear-berry*, or *Trailing Arbutus*.
Bear's Whortleberry, *Wild Cranberry*, *&c.*

QUALITIES. *Odour*, slight, resembling that of hyson tea; *Taste*, bitterish and sub-astringent. CHEMICAL COMPOSITION. Tannin, mucilage, gallic acid, extractive, resin, and traces of lime. SOLUBILITY. Both water and alcohol extract its virtues. MED. USES. The ancients employed it on account of its astringency, the moderns, however, have exhibited it for various diseases, and, it would seem, without any theory respecting its *modus operandi*; but it has at length fallen into disrepute, and probably, with justice; when it is administered, the form of powder is preferred, and in doses from ℈j to ʒj. The leaves of the *Vaccinium Vitis Idæa*, (Red Whortleberry,) are sometimes substituted for those of *Uvæ Ursi*; but they may be easily distinguished; *botanically*, by the net work appearance of their veins above, and by their dots underneath; *chemically*, by their infusion neither precipitating the solution of isinglass, nor that of sulphate of iron.

ZINCI OXYDUM. L.E.D.

Oxide of Zinc.

This is occasionally used internally as a tonic, and may be exhibited in the form of pill. It is, however, principally employed externally, as a mild but efficient astringent; viz. *Ung. Zinci*. ADULTERATION. Dr. Roloff of Magdeburg has lately discovered the casual presence of *Arsenic** in this oxide; by boiling the substance in distilled water, and assaying the solution with the ammoniaco-nitrate of silver, its presence may be instantly recognised; *Chalk* may be detected by sulphuric acid, exciting an effervescence; and *White Lead*, by its forming an insoluble sulphate of lead. It ought to be volatile.

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* I have been lately informed by a practical chemist, that he has occasionally found his hydrogen, when produced by zinc and dilute acid, to contain a portion of *Arsenuretted* hydrogen; a fact which confirms the assertion of Roloff.

ZINCI SULPHAS. L.E.D.

Sulphate of Zinc, olim, *White Vitriol*.

Qualities. *Form*, crystals, which are four-sided prisms, terminated by four-sided pyramids; they are slightly efflorescent; *Taste*, styptic, metallic, and slightly acidulous. Chemical Composition. One proportional of oxide, and one proportional of acid; its crystals contain seven proportionals of water. Solubility. It is soluble in 2.5 times its weight of water at 60°, and in less than its own weight of boiling water, but it is quite insoluble in alcohol. Incompatible Substances. *Alkalies; earths; hydro-sulphurets; astringent vegetable infusions; Milk.* Med. Uses. Tonic, astringent, and in large doses emetic, (*Form.* 66.) As an emetic it operates directly, and offers therefore a prompt resource in cases of poison, or where an immediate discharge from the stomach is required; it appears to differ from most remedies of this nature, in not proving diaphoretic in smaller doses: in spasmodic* coughs it is administered with the best effects, especially when combined with camphor or myrrh, (*Form.* 59:) in affections of the chest attended with inordinate secretion, I have witnessed much benefit from its exhibition, particularly when presented in the form of lozenge; and, when dissolved in water, in the proportion of grs. ij to f℥j, it forms a useful injection in fluor albus, &c. When combined with opium it is well calculated to obviate that atony, and those frequent discharges of fæces without pain, that take place in the protracted stages of dysentery. As an external application it is very generally employed in the proportion of grs. x to eight fluid ounces of water. The supposed ill effects consequent on the application of preparations of lead to a great surface have determined some practitioners to substitute in their place, solutions of sulphate of zinc, but not with the same effect, for to that very property, which may occasionally render saturnine lotions dangerous, is their virtue to be attributed; see *Liquor Plumbi Sub-acetatis.* Dose, as an emetic, from grs. x to ʒss—as a tonic, and astringent, from grs. j. to ij. Officinal Prep. *Liquor. Alum. comp.* (𝔅)L. *Solutio Sulphatis Zinci.* E. *Solutio Acetatis Zinci.* (𝔍) E. *Tinct. Acetatis Zinci.* (𝔍) D. Adulterations. The *white vitriol* of commerce ought never to be used in medicine, without previous purification, since it generally contains the sulphates of copper and iron.

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* The various quack remedies advertised for the cure of the *hooping-cough* are either *Opiates*, or medicines composed of *sulphate of zinc*.

ZINGIBERIS RADIX. L.E.D. (Zinziber Officinalis.) *Ginger.*

Chemical Composition. Volatile oil, fecula, and resino-extractive matter; on the first of these principles its well-known flavour and odour depend: but its pungency resides in the last. Solubility. Water, alcohol, and æther, extract its virtues. Med. Uses. It is highly stimulant, and is therefore frequently beneficial in flatulent cholic, dyspepsia, and gout; it is however more generally employed as an adjunct to other remedies, to promote their efficacy, or to correct their operation, (see *Form.* 92, 94, 112, 153,) and it is found, that it does not produce the ill effects of those spices, whose virtues reside in an acrid oil. Dose, of the powders grs. x to ℈j. Officinal Prep. *Syrup. Zingib.* L E.D. *Syrup Rhamni.* (■) L. *Tinct. Zingib.* L.D.* *Tinct. Cinnamon. comp.* (■)L. *Acid. Sulphuric. aromat.* E. *Confectio Opii.* L. *Confectio Scammon.* (■) L.D. *Infus. Sennæ.* (■) L. *Pulvis Cinnamon. comp.* (■) L.E.D. *Pulv. Scammon. comp.* (■) L.D. *Pulv. Sennæ comp.* (■) L. *Pil. Aloes.* D. *Pill. Scillæ comp.* L.D. *Vinum Aloes.* L.E.D. Adulterations. The powder is rarely met with in any tolerable degree of purity; there are two varieties of ginger in the market, viz. the *Black*, produced by scalding the root, and afterward hastily drying it in the sun; and the *White*, being that which has been carefully washed, scraped, and gradually dried.

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* Oxley's Concentrated Essence of Jamaica Ginger.—A mere solution of Ginger in Rectified spirit.

Ginger Beer Powders.—White sugar ʒj ℈ij, ginger grs. v. sub-carbonate of soda grs. xxvj, in *blue paper.* Tartaric acid grs. xxx, in each *white paper.* These proportions are directed for half a pint of water.

Ginger Beer. The following is the receipt by which this popular beverage is prepared. Take of lump sugar half a pound; of cream of tartar half an ounce; Bruised Ginger an ounce; boiling water one gallon. Ferment for twenty-four hours with yeast.

Preserved Ginger.—That from India is almost transparent, while that manufactured in Europe is always opaque and fibrous.

FINIS.

INDEX

TO

THE PATENT MEDICINES, AND NOSTRUMS,

DESCRIBED IN THIS WORK.

" *Arcana revelata fætent.*"—BOERH:

" *Nullum Ego cognosco remedium nisi quod* TEMPESTIVO USU *fiat tale.*—IBID.

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